



John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

12/21/2018

Jack Payne
PTTGCA Petrochemical Complex
2800 Post Oak Blvd., Suite 2401
Houston, TX 77056

RE: FINAL AIR POLLUTION PERMIT-TO-INSTALL
Facility ID: 0607135004
Permit Number: P0124972
Permit Type: Initial Installation
County: Belmont

Certified Mail

Yes	TOXIC REVIEW
Yes	PSD
No	SYNTHETIC MINOR TO AVOID MAJOR NSR
Yes	CEMS
Yes	MACT/GACT
Yes	NSPS
Yes	NESHAPS
No	NETTING
No	MAJOR NON-ATTAINMENT
Yes	MODELING SUBMITTED
Yes	MAJOR GHG
No	SYNTHETIC MINOR TO AVOID MAJOR GHG

Dear Permit Holder:

Enclosed please find a final Ohio Environmental Protection Agency (EPA) Air Pollution Permit-to-Install (PTI) which will allow you to install or modify the described emissions unit(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, we urge you to read it carefully. Because this permit contains conditions and restrictions, please read it very carefully. In this letter you will find the information on the following topics:

- **How to appeal this permit**
- **How to save money, reduce pollution and reduce energy consumption**
- **How to give us feedback on your permitting experience**
- **How to get an electronic copy of your permit**
- **What should you do if you notice a spill or environmental emergency?**

How to appeal this permit

The issuance of this PTI is a final action of the Director and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of \$70.00, made payable to "Ohio Treasurer Josh Mandel," which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
30 East Broad Street, 4th Floor
Columbus, OH 43215

How to save money, reduce pollution and reduce energy consumption

The Ohio EPA is encouraging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Compliance Assistance and Pollution Prevention at (614) 644-3469. Additionally, all or a portion of the capital expenditures related to installing air pollution control equipment under this permit may be eligible for financing and State tax exemptions through the Ohio Air Quality Development Authority (OAQDA) under Ohio Revised Code Section 3706. For more information, see the OAQDA website: www.ohioairquality.org/clean_air

How to give us feedback on your permitting experience

Please complete a survey at www.epa.ohio.gov/survey.aspx and give us feedback on your permitting experience. We value your opinion.

How to get an electronic copy of your permit

This permit can be accessed electronically via the eBusiness Center: Air Services in Microsoft Word format or in Adobe PDF on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab.

What should you do if you notice a spill or environmental emergency?

Any spill or environmental emergency which may endanger human health or the environment should be reported to the Emergency Response 24-HOUR EMERGENCY SPILL HOTLINE toll-free at (800) 282-9378. Report non-emergency complaints to the appropriate district office or local air agency.

If you have any questions regarding your permit, please contact Ohio EPA DAPC, Southeast District Office at (740)385-8501 or the Office of Compliance Assistance and Pollution Prevention at (614) 644-3469.

Sincerely,



Michael E. Hopkins, P.E.
Assistant Chief, Permitting Section, DAPC

Cc: U.S. EPA
Ohio EPA-SEDO; Pennsylvania; West Virginia



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

12/24/18 Corrected Copy

Response to Comments

Facility ID:	0607135004
Facility Name:	PTTGCA Petrochemical Complex (PTTGCA)
Facility Description:	Petrochemical Complex
Facility Address:	57246 Ferry Landing Rd Shadyside, OH 43947 Belmont County
Permit:	P0124972, Permit-To-Install - Initial Installation
A public notice for the draft permit issuance was published in the Ohio EPA Weekly Review and appeared in the Times Leader on 10/23/2018. The comment period ended on 12/11/2018.	
Hearing date (if held)	11/27/2018
Hearing Public Notice Date (if different from draft public notice)	

The following comments were received during the comment period specified. Ohio EPA reviewed and considered all comments received during the public comment period. By law, Ohio EPA has authority to consider specific issues related to protection of the environment and public health. Often, public concerns fall outside the scope of that authority. For example, concerns about zoning issues are addressed at the local level. Ohio EPA may respond to those concerns in this document by identifying another government agency with more direct authority over the issue.

In an effort to help you review this document, the questions are grouped by topic and organized in a consistent format. PDF copies of the original comments in the format submitted are available upon request.

I. Topic: Health and Environmental Impact Concerns

Comment 1: More than 1,000 comments were received indicating the air pollutants (including air toxics) emitted from the PTTGCA Petrochemical Complex pose a threat to public health and a health impact assessment should be performed.

Response 1: Ohio EPA's permitting process for new air pollution sources includes evaluating toxic air contaminants to ensure any new source does not cause any significant adverse human health or environmental impacts. The regulations and requirements for evaluating air toxics (typically called air toxic analysis) are contained in Ohio Administrative Code (OAC) rule 3745-114-01 and Ohio Revised Code (ORC) 3704.03(F)(3)(c) and (F)(4). The air toxic analysis involves a computer modeling approach to demonstrate expected concentrations conform to a value called the Maximum Acceptable Ground Level Concentration (MAGLC). MAGLCs are concentration screening values which are applied to determine that the level of air toxics emitted will not cause any significant adverse human health or environmental impacts. Ohio EPA has determined that when an air toxic compound is emitted at a level less than 1.0 ton per year the above modeling analysis is not required, and the level of air toxic emission will not cause any significant adverse human health or environmental impacts. Additionally, the modeling analysis above is not required for air toxic emissions



which are subject to a maximum achievable control technology standard (MACT) or residual risk standards under section 112 of the federal Clean Air Act. For additional information regarding the implementation of an air toxic analysis refer to Ohio EPA Engineering Guide #70 – Air Toxic Analysis, which can be accessed here:

<https://www.epa.ohio.gov/portals/27/engineer/eguides/Guide70Final20170509.pdf>

Additionally, the impact from non-toxic or criteria pollutants (i.e. nitrogen oxide, particulate matter, etc.) was also evaluated through computer simulated modeling that demonstrated emission levels would conform with National Ambient Air Quality Standards (NAAQS). The Clean Air Act establishes NAAQS to be protective of human health and the environment.

Comment 2: More than 1,000 comments were received regarding health concerns from increased smog and concerns of increased cancer risks.

Response 2: See Response 1.

Comment 3: More than 1,000 comments were received indicating the permit application does not consider the long-term health and safety impacts of the project.

Response 3: The Division of Air Pollution Control issues and enforces permits for installation and operation of sources of air pollution as a component of ensuring compliance with applicable air pollution rules and regulations. Air pollution rules and regulations involve health-based air quality standards based on the latest science and available technologies to protect human health as well as the environment in both the short- and long-term. Ohio EPA believes that as long as PTTGCA complies with the requirements in the permit, public health and welfare will be protected both in the short- and long-term.

The air permit does not regulate safety per se. Instead, other programs regulate the safe operation of the facility. For instance, the Occupational Safety and Health Administration (OSHA) regulates safety aspects of workers in the plant. The Risk Management Program (RMP) requires plant operators to prevent accidents and operate safely. Ohio EPA operates this program, but it is through a separate mechanism from the air permit. The State Emergency Response Commission (SERC) is also an organization that works closely with Local Emergency Planning Committees (LEPCs) to improve hazard communications and emergency planning. These other programs, and others, all have rules and regulations that are designed to promote the safe operation of industrial facilities.

Comment 4: More than 1,000 comments were received expressing concern about the proximity of the proposed plant to schools, shopping centers and nearby residences.

Response 4: The emissions limits established in the permit ensure that all populations will be protected, regardless of their physical proximity. As stated in the Response to Comment 1.a, permitted levels of emissions are protective of human health and the environment and have been evaluated beyond plant boundaries including areas in immediate proximity to the facility.

Comment 5: Eight comments were received indicating environmental hazards/impacts were not assessed (or not assess properly).

Response 5: See Response 1.

Comment 6: More than 1,000 comments were received indicating Ohio's EPA review process does not account for the cumulative effect and impact of potential air spin-off facilities, increased fracking, additional oil and gas development and petrochemical plants.



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

Response 6: Air pollution rules and regulations are structured to attain and maintain compliance with air quality standards with consideration of existing sources and the addition of new air pollution sources. Federal Prevention of Significant Deterioration (PSD) regulations, which were applicable to the proposed installation for the PTTGCA Petrochemical Complex, require specific demonstrations that the current air quality with consideration of existing sources and the increase in emissions from a new source will conform with NAAQS. Additionally, PSD regulations provide for future growth and installations by limiting the effect emission increases from new sources can have on current air quality levels.

The commenters are correct that Ohio EPA's review process does not account for the cumulative effect and impact of future facilities. Our review process cannot account for potential future projects because they are unknown.

Comment 7: Five comments were received stating that quality craftsmen used in construction would be second to none with state-of-the-art technology and monitoring making the plant safe and environmentally friendly.

Response 7: Thank you for your comment. Ohio EPA does not evaluate the quality of construction of industrial plants. However, Ohio EPA does evaluate if the plant, as constructed, complies with all of the applicable air pollution requirements. Extensive emissions testing will be required to demonstrate compliance once the facility is built.

Comment 8: A single comment was received regarding the concern of impacts on wildlife habitat and decreased biodiversity that will result.

Response 8: See Response 1.

Comment 9: One commenter stated the project will result in the cleanup of old site (R.E. Burger) that may not have been remediated otherwise.

Response 9: Ohio EPA agrees the proposed project has resulted in expedited demolition of the closed coal-fired power plant and cleanup of the property for future industrial use.

Comment 10: Eight comments were received concerning the adverse impact on climate change from increased greenhouse gas emissions, both from the plant and by increasing demand for fracked natural gas.

Response 10: The PTTGCA Petrochemical Complex is subject to federal PSD regulations, which include requirements for controlling greenhouse gas (GHG) emissions. GHG emissions are regulated through the application of Best Available Control Technology (BACT) and the establishment of carbon dioxide equivalent (CO₂e) emission limitations. CO₂e emission limitations represent the level of GHG emissions from the application of BACT. BACT involves energy-efficient fuel combustion and minimizing fugitive emissions from equipment leaks at the facility.

Regulating GHGs through a PSD permit is the only legal mechanism Ohio EPA has to regulate GHGs. We do not have the legal authority to evaluate any additional GHG emissions that might come from the increased demand for fracked natural gas.

Comment 11: Twelve comments were received expressing the need to move from fossil fuels to renewable energy and alternatives uses involving plastics.

Response 11: The Agency encourages the adoption of measures that would minimize or eliminate air emissions. Ohio EPA cannot, however, require a specific type of source be installed or a specific type of fuel



be used. The Agency can only require the proposed source meet specific emissions limitations and/or control techniques/measures. Ohio EPA does not have authority to specify the type of fuel sources or require the manufacturing of alternative materials.

Comment 12: More than 1,000 comments were received stating if the permit is approved, Ohio EPA would not be performing its job to protect human health.

Response 12: Ohio EPA is legally obligated to evaluate all proposed sources and determine whether they are able to comply with all applicable state and federal air pollution control regulations. The air permit documents what the proposed sources must do in order to comply with these regulations. As long as the emission sources meet the permit terms and conditions, the potential emissions are not expected to cause adverse health and welfare effects. Pursuant to ORC 3704.03(F)(2)(a): “No installation permit shall be issued except in accordance with all requirements of this chapter and rules adopted thereunder. No application shall be denied or permit revoked or modified without a written order stating the findings upon which denial, revocation, or modification is based.” Ohio EPA has no findings that support a denial of the permit application, and; therefore, Ohio EPA is legally obligated to issue the air permit because the potential air contaminants from this facility are within the emission thresholds allowed under state and federal air pollution control regulations.

Comment 13: Two comments were received indicating the plant will reduce overall greenhouse gas emissions by locating a facility where the supply is (instead of transporting ethane to the Gulf Coast and polyethylene back to the mid-West) and strengthen national security by producing petrochemicals in an area less prone to weather threats so the supply chain is maintained, and costs do not rise to produce plastics.

Response 13: When an applicant requests a PTI for a project, federal and state air permitting laws and rules require Ohio EPA to evaluate the emissions coming from the new plant but do not allow Ohio EPA to evaluate potential changes in emissions from other collateral sources. So, this permit limits the greenhouse gas emissions from this plant, but it does not address any other collateral sources.

II. Topic: Self-monitoring, Compliance and Emergency Release Issues

Comment 1: Nearly 1,000 comments were received indicating fence line monitoring should be employed to assure compliance as was required for the Shell Chemical Appalachia LLC (“Shell”) plant in Beaver County, Pa., and other chemical plants and petroleum refineries in the United States.

Response 1: Fence line monitoring is not required by any specific environmental rule or regulation applicable to the PTTGCA Petrochemical Complex. Fence line monitoring was a voluntary requirement incorporated into the Shell plant permit as part of a settlement agreement to resolve an appeal of the permit. Fence line monitoring was incorporated into the Shell permit to address emissions associated with fugitive leaks from equipment and process units. The PTI for the PTTGCA Petrochemical Complex addresses fugitive leaks by the implementation of a comprehensive program that involves leak standards, leak control, and leak detection and repair including ongoing leak monitoring of equipment and process unit components.

Comment 2: A single concern was submitted regarding self-monitoring and reporting by the company.

Response 2: Monitoring and reporting by a facility owner/operator is one of many components used for determining compliance with environmental laws and regulations. Provisions for determining compliance from the use of self-monitoring and reporting are contained within the Clean Air Act. Compliance requirements are addressed in Section A.6 of the permit and outline the requirement of certification by a Responsible Official regarding the true, accuracy, and completeness of required documents. Falsification of records required by air pollution rules and regulations would be subject to criminal penalties. In addition to self-monitoring information,



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

Ohio EPA conducts facility inspections, observes air emission testing, responds to complaints and uses other sources of information for determining compliance.

Comment 3: Three comments were received regarding problems and the poor compliance record of existing petrochemical plants being sued by U.S. EPA.

Response 3: The air permit contains emissions testing, monitoring and recordkeeping and reporting requirements to verify that the company is meeting its regulatory obligations and to ensure ongoing compliance. These requirements are legally binding requirements that the company must meet. Ohio EPA will review and inspect facilities such as this to ensure they are meeting all of their air pollution requirements.

Ohio EPA does not have the authority to deny an air permit based on the applicant's environmental compliance history or compliance history of other similar entities. We can, however, review compliance problems occurring with other similar facilities in an effort to learn how to prevent those kinds of problems. Ohio EPA is aware of some compliance problems at other similar non-PTTGCA facilities in the United States. We are not, however, aware of any non-compliance issues with PTTGCA facilities.

Comment 4: Five comments were received concerning hazards associated with accidents and plant safety.

Response 4: Air pollution regulations address accidents and plant safety through the Risk Management Plan (RMP) rule as required by the Clean Air Act. The RMP rule requires a facility to develop a plan that addresses hazard assessment of accidental releases, a prevention program inclusive of safety precautions, maintenance, etc. and an emergency response program including the involvement of local response agencies (i.e. fire department, EMS, etc.). Additional information regarding the RMP rule can be accessed here:

<https://epa.ohio.gov/dapc/atu/112r>

The RMP program is not addressed in the air permit because it is addressed through other mechanisms.

Comment 5: Three commenters believe continuous monitoring and BACT/BAT requirements are protective of human health.

Response 5: The BACT requirements, continuous monitoring for NOx and CO which ensures the large combustion sources meet the short-term emissions limitations, and initial and periodic stack testing for other criteria pollutants (VOC, PE, PM10, PM2.5) to demonstrate compliance with BACT emissions limitations ensures compliance with state and federal air pollution control laws and rules. These laws and rules that have been developed to be protective of human health by ensuring the area is in compliance with the NAAQS.

Comment 6: Four commenters stated hazards can be managed when all parties involved follow the laws, regulations, SOPs, and the Safety Plan developed for the plant site with the oversight of Ohio EPA.

Response 6: Ohio EPA believes it is important for any facility to comply with laws and regulations associated with the safe operation of a facility. Ohio EPA believes compliance with the terms and conditions of the PTI will protect human health and the environment from air emissions from the proposed project. The air permit, however, covers air pollution requirements only. It is not designed to cover other health and safety rules and regulations that apply. There are many other programs, federal, state and local that are designed to protect the safety of both workers at the plant and citizens near the plant and they each have their own mechanism that is used to enforce those requirements.

Comment 7: One comment indicated safety can be ensured by rigorous approach to compliance with air emissions standards and all parties working in good faith.



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

Response 7: Ohio EPA agrees compliance with the terms and conditions of the PTI will protect human health and the environment from air emissions from the proposed project. However, the federal and state air permitting laws and rules do not address the federal and local safety regulations that will apply to the proposed plant.

Comment 8: Five commenters believe Ohio EPA has track record of fair and effective enforcement of environmental laws that protect public health.

Response 8: Thank you for your comment. Ohio EPA's mission is, in part, to protect human health and the environment. We believe this is an important part of what we do every day. Ohio EPA has obtained and maintained authorization from U.S. EPA to implement the Clean Air Act in Ohio. This continuing authorization demonstrates the effectiveness of Ohio EPA's Air Pollution Control programs, including compliance monitoring and enforcement.

Comment 9: Six commenters noted the company is internationally recognized for its environmental management and sustainability.

Response 9: Through its permit application and supplements, PTTGCA has demonstrated that it can comply with the applicable federal and state air pollution control laws and rules.

III. Topic: Impacts on Area (traffic, drugs, crime, property values, increased fracking and pipeline construction)

Comment 1: Ten comments were received citing the project increases the area's dependence on the unpredictable oil and gas industry; traffic accidents, deteriorating road conditions, drugs and crime have increased due to oil and gas activity; property values have been reduced; good jobs will go to outsiders and not locals; noise and light concerns.

Response 1: The issues identified by these commenters are all important issues that typically arise when communities see some kind of expansion. It is important for communities to plan for these changes to minimize any adverse impacts. Ohio EPA recommends that citizens work closely with their local officials to properly plan for the expansion.

Although Ohio EPA recommends citizens work with their local officials, we do not have the legal authority to consider these types of issues when deciding on an air permit. The above comments pertain to issues that fall outside the Ohio EPA's regulatory authority. It would be appropriate for concerned citizens to contact local zoning organizations to address concerns such as noise, light and property values.

Comment 2: Two commenters believe the project makes good use of abundant natural resources and existing transportation network in the area.

Response 2: When an applicant requests a PTI for a project, federal and state air permitting laws and rules do not allow Ohio EPA to consider the availability of feedstock for the plant or to evaluate the impact a project will have on transportation in an area. So, this permit process did not evaluate the use of natural resources or the transportation network.

IV. Topic: Economic Development and Job Creation

Comment 1: Nineteen comments were received in favor of the project due to the economic development opportunities it would generate for the area.



Response 1: Ohio EPA works closely with many other state programs to help support appropriate economic development. We want to do what we can to support new projects by helping projects understand what they need to do to comply with the air pollution rules and regulations. Although economic development is not something we can consider when we decide if a permit should be issued, we fully understand the importance of quality jobs.

Comment 2: Twelve commenters support the proposed project because it will result in the creation of good paying jobs (short term construction and long term at plant) by leveraging area resources

Response 2: See Response 1.

V. Topic: Permit-specific Comments

a) U.S. EPA, Region 5 submitted the following permit-specific comments:

Comment 1: The draft permit does not include a limit on the number of hours the ethane cracking furnaces (B001 -B006) can operate in modes other than "normal" (startup, shutdown, maintenance, decoking, hot steam standby) with the exception of the following:

- a. Startup duration is limited to 24 hours per startup in permit condition C.1.b)(2)a., however, there is no limit on the number of startup events.
- b. For decoking, permit condition C.1.b)(2)a. provides a frequency of every 45-60 days and approximately 36 hours per event.

Since best available control technology (BACT) limits for nitrogen oxides (NOx) are higher during these other operating modes, it is not clear how often the source will be able to emit at these higher emission rates. Please clarify the number of hours the source will be allowed to operate in each of the operating modes.

Response 1: Ohio EPA did not establish limits on the hours of operation for non-normal operation modes for any pollutant because, as with all the new combined cycle combustion turbines (CCCTs) we have permitted recently, we included rolling, 12-month limits across all six furnaces that include startup and shutdown emissions. Those limits are based on the proposed potential to emit (PTE) in the permit application where the company detailed the worst-case emissions from all modes, including maximum expected startup, shutdown, decoking emissions as detailed in the monitoring section. Because continuous emissions monitoring systems (CEMS) will be used to monitor NOx emissions, and the company is required to use that data to calculate monthly compliance (on a 12-month rolling basis) with the NOx limit that includes the SU/SD emissions, Ohio EPA believes inclusion of limits on hours of operation for the non-normal modes would be duplicative and unnecessary. The modeling did evaluate the non-normal operating mode higher NOx emissions and showed that all air quality requirements were met.

Comment 2: Permit condition C.4.b)(2)a. (pg. 69) addresses BACT requirements for the catalyst activation section of High Density Polyethylene (HDPE) Manufacturing Unit #1 (P802). Volatile organic compounds (VOC) and particulate matter (PM) BACT for HDPE manufacturing other than the catalyst activation section are addressed in condition b)(2)b. and c. However, the permit does not address NOx, carbon monoxide (CO), and carbon dioxide equivalent (CO2e) BACT limits for the HDPE manufacturing process other than the catalyst activation section. Please clarify the BACT requirements of NOx, CO, and CO2e for these processes. The same comment applies to permit conditions in Section C.5 for HDPE Unit #2 (Unit P803).

Response 2: NOx, CO and GHGs are not generated by other portions of the HDPE manufacturing process other than the catalyst activation section and, as such, only VOC and PM limitations were established. The



permit does identify HDPE vents for which VOCs are required to be controlled by either a flare or thermal oxidizer and emissions of NOx, CO, CO2e, etc. have been addressed in the requirements associated with the flare and thermal oxidizer emissions units (See P001, P002, P003, & P004).

Comment 3: Permit condition C.6.b)(1)a. (pg.101) states that Unit P804 is subject to BACT for CO2e. However, the BACT requirements permit condition C.6.b)(2) do not include CO2e limits. Please include the CO2e BACT requirements for this unit. This comment also applies to Section C.7 (Unit P805).

Response 3: The manufacturing process for the LLDPE/HDPE manufacturing units (P804 and P805) is very similar to that for the HDPE process in the sense that greenhouse gases are not generated and, as such, no CO2e limitations have been established. The permit does identify LLDPE/HDPE vents for which VOCs are required to be controlled by either a flare or thermal oxidizer and emissions of CO2e have been addressed in the requirements associated with the flare and thermal oxidizer emissions units (See P001, P002, P003 and P004).

Comment 4: Permit condition C.9.c)(1)c. (pg. 138) and C.10.c)(1)c. (pg. 146) state the permittee is required to calculate the net heating value of the gas stream being combusted at the flares. The permit notes that the respective testing sections require calculations, however, the calculation method that will be used to determine the net heating value for the gas streams is missing. Please revise the permit to include the calculations method and monitoring and recordkeeping requirements for all information necessary to perform calculations.

Response 4: The net heating value of the gas and the exit velocity of the flares are requirements contained in NSPS and MACT regulations that are applicable (i.e. 40 CFR Part 60.18). Terms C.9.f)(1)c. on pages 142 and 150 indicate compliance will be demonstrated by the requirements outlined in the listed applicable regulations. The flares will be required to undergo the required performance testing which will include a demonstration of compliance with the net heating value of the gas and exit velocity per applicable regulations.

Comment 5: Permit condition C.16.b)(2)a.ii. requires that the source conduct inspections of in-plant haul roads and parking areas to determine if an exceedance of the emission limitations has occurred and best management practices must be implemented. The permit does not identify inspection procedures or reference where those procedures can be found.

Response 5: Ohio EPA is using its simplified approach for controlling dust from the PTTGCA haul roads and parking areas. These haul roads and parking areas will all be paved so we do not expect any visible emissions from them except for very rare occasions, for instance, if some material gets spilled. The approach we detailed in the terms requires PTTGCA to visibly check the roads once a day to see if there are any visible emissions. If visible emissions are observed, then they would need to take some action to correct the situation. No opacity readings are necessary. Instead, it is just a check to see if any visible emissions are observed. Recordkeeping and reporting are required to ensure the daily checks are conducted and any needed action is taken.

Appendix Comment 1.a.: Permit conditions C.1.d)(7)c. and d. (pg. 29) require the source to maintain monthly records of the heat content and sulfur content of gaseous fuel combusted in the ethane cracking furnaces (units B001-B006). Similarly, permit condition C.2.d)(7)c. (pg. 50) requires the source to maintain monthly records of the sulfur content of the gaseous fuel combusted in the steam boilers (units B007-B009). The permit record, however, does not explain how these amounts are measured. For the gaseous fuel combusted in these units, please clarify how the source will record the heat and sulfur content for units B001-B006 and the sulfur content for units B007-B009. For example, permit condition C.2.d)(6) requires the source to operate equipment to continuously monitor and record natural gas fuel flow rate to determine heat content for units B007-B009.



Response 1.a. Ohio EPA reviewed this situation more closely and determined monthly sampling of the heat content and sulfur content of these fuels is unnecessary. We do not expect these values to change significantly over time because the fuels burned in the cracking furnaces have either no sulfur (tail gas) or for NG, the variability of sulfur and heat content is very low, and it will need to meet the definition of pipeline quality natural gas. 40 CFR 72.2 defines pipeline quality natural gas as:

"Pipeline natural gas means a naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced in geological formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions, and which is provided by a supplier through a pipeline. Pipeline natural gas contains 0.5 grains or less of total sulfur per 100 standard cubic feet. Additionally, pipeline natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 950 and 1100 Btu per standard cubic foot."

We also do not expect the BTU content of the tail gas to vary significantly. Because these values do not vary, no periodic sampling will be needed, and default values will be used to do the calculations.

Appendix Comment 1.b.: In the monthly records requirements listed in permit condition C.1.d)(7) for the six ethane cracking furnaces (pg. 29), some items apply to "this emissions unit" whereas other items apply to "emissions units B001-B006, combined." Please clarify whether the term "this emissions unit" applies one particular furnace, each of the six furnaces, or all six furnaces combined.

Response 1.b.: When terms are grouped for like emissions units, it is Ohio EPA's practice to write the terms in singular tense such that "this emissions unit" means each furnace in the group individually. Term C.1.d)(7) is the recordkeeping requirement used to calculate compliance with the rolling, 12-month BACT limits which are combined limits across all six furnaces. To do this calculation monthly, data from each individual furnace must be collected and the monthly data for each furnace must be summed in order to determine rolling, 12-month actual emissions from all six furnaces combined.

Appendix Comment 1.c.: Permit condition C.1.d)(7)k. (pg. 29) requires the source to calculate particulate emissions based on one of the emission factors listed in this condition "or the results of the most recent stack test". Please clarify whether the availability of an emission factor based on the most recent stack test results would supersede the 0.005 lb/MMBtu emission factor listed in the permit.

Response 1.c.: The BACT emissions limitation of 0.005 lb/MMBtu will still apply and will not be superseded after stack testing is complete. The intention of the stack testing factor option is to allow the company to use stack test data to calculate actual emissions and compliance with the rolling, 12-month BACT limits after stack testing has been completed. If stack testing shows an exceedance of 0.005 lb PE/PM10/PM2.5, the company would be in violation of the short-term BACT limit for particulate and it would have to address the non-compliance.

Appendix Comment 1.d.: Permit condition C.3.b)(2)a.ii (pg. 64) says BACT for GHG emissions is "implementation of a facility specific program reducing fugitive component equipment leaks for applicable component equipment in the ethylene manufacturing unit." This condition should cite permit condition C.12.b)(2)e., which discusses BACT for fugitive leaks of GHG (pg. 170).

Response 1.d.: The permit clarification item has been incorporated into the final issuance of the permit.

Appendix Comment 1.e.: Permit condition C.4.b)(2)b.v (pg. 73), C.5.b)(2)b.v. (pg. 90), C.6.b)(2)a.v. (pg. 104), and C.7.b)(2)a.v. (pg. 116) state BACT for VOC emissions includes "implementation of a facility specific program reducing fugitive component equipment leaks including applicable component equipment in the



polyethylene manufacturing line." These conditions should reference the facility-wide fugitive emissions requirements in Section C.12.b)(2)b. and c., which discusses BACT for fugitive leaks (pg. 169).

Response 1.e.: The permit clarification item has been incorporated into the final issuance of the permit.

Appendix Comment 1.f.: Permit condition C.11.b)(2)a.iii. (pg. 157), requires that emissions from several process points within the waste water treatment operations are covered and routed to a thermal oxidizer. Please clarify whether the cover and routing of emissions applies to a single point in the operation or to each individual process point. Additionally, there is no monitoring requirement to ensure that the cover or emission routing system is inspected or maintained for continuous compliance with the condition, please update the section to include an inspection requirement and schedule for the cover.

Response 1.f.: The requirement is that each of the three tanks and the wet air oxidation unit (a process vessel) be covered and emissions vented to the WWTP TOX. Per the application, BACT for the wastewater collection and treatment EU is compliance with the most stringent requirements of 40 CFR Part 63, Subparts FFFF (and F and G by reference), XX, YY and/or 40 CFR Part 61, Subpart FF. Ohio EPA has used the general citation approach to incorporation by reference as outlined in Engineering Guide 76 to identify the applicable federal requirements. Thus, all of the monitoring and compliance requirements that apply to the closed vent and cover systems will not be detailed in the PTI. Instead, these requirements will be incorporated via the detailed citation approach in the Title V operating permit.

Comment 1.g.: Permit sections C.14. and C.15. contain PM10/PM2.5 BACT limits for the railcar loading operations (P901 and P902). These sections do not require initial performance testing or parametric monitoring as the baghouses to ensure the BACT limits are being met. Please clarify how the facility will be verifying that the control equipment will meet the BACT limits.

Response 1.g.: Baghouse performance is required to be monitored on an ongoing basis through the visible particulate observations from baghouse stacks which is contained in the "Monitoring and Recordkeeping Requirements" for the emissions units (P901 and P902).

Baghouse control has been established as BACT for many of the process vents at the facility that generate filterable particulate matter. Requiring initial testing of all baghouses would not be practical and a demonstration that baghouse control employed at the facility would conform with BACT requirements could be evaluated through the testing of the allowable emissions of 0.005 gr/dscf for PM10/PM2.5 from the catalyst vent in Linear Low/High-Density Polyethylene Manufacturing Unit #3 (Emissions Unit P804). Based on the performance of the catalyst vent as representative of operations that would present the most challenge to baghouse filter control at the facility, testing results would be evaluated to determine the necessity for testing other baghouse vents such as those within railcar loading operations. Additionally, Ohio EPA would use the initial testing results for determining additional baghouse vents that should require testing within the facility's Title V permit.

Appendix Comment 1.h.: Ohio EPA should consider adding the option to use optical gas imaging cameras as an alternative work practice for leak detection requirements in 40 CFR Parts 60, 61, and 63, as provided in the general provisions of those parts.

Response 1.h.: The final permit includes specific language identifying the option to use optical gas imaging cameras as an alternative.

b) On 12/11/18, a letter was received from Richard C. Sahli with Richard Sahli Law Office LLC and Megan M. Hunter with Hunter & Hunter LLC containing the joint comments of the following organizations: Sierra Club, FreshWater Accountability Project, Earthworks, Center for Biological Diversity, Ohio Allies, Buckeye



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

Environmental Network, Concerned Barnesville Area Residents, Mountain Watershed Association, Center for Coalfield Justice, Ohio Valley Environmental Coalition, FracTracker Alliance, Clean Air Council, and the Breathe Project. The letter contained the following permit-specific comments:

Comment II.B.: The proposed location for the PTTGCA Petrochemical plant is the former site of the R.E. Burger Power Plant. FirstEnergy negotiated the demolition of the Burger Plant and a negligible clean-up effort through Ohio EPA's Voluntary Action Program (VAP). Documents submitted to Ohio EPA on behalf of FirstEnergy identify 12 large areas on the property with known or suspected contamination (including the former coal pile area, former ash and settling ponds, underground storage tanks, and former transformer area). This known or suspected contamination includes VOCs, PCBs, polycyclic aromatic hydrocarbons (PAHs), arsenic, mercury, and other heavy metals in soils and groundwater. Despite the serious known or suspected contamination at the site, no significant clean-up took place. Instead, environmental covenants limit the site to industrial use and prohibit drinking of groundwater. The construction of the PTTGCA Facility is likely to result in disrupting these contaminated soils and may create additional pathways for contaminants to migrate. These serious concerns are in no way evaluated or addressed in PTTGCA's application or by the draft PTI.

Response II.B.: This comment raises an issue unrelated to air emissions that is the subject of the draft permit under review. Nonetheless, the site is subject to Ohio EPA's Voluntary Action Program (VAP), found at OAC Chapter 3745-300. The VAP process included the execution of an environmental covenant. The activity and use limitation of the environmental covenant for this site restricts the land use to industrial use only and prohibits groundwater extraction for any potable use. Consequently, the site will be used only for industrial uses, with groundwater use restricted. As stated in the covenant, the activity and use limitation protects against exposure to the hazardous substances in soil on or underlying the site. Ohio EPA's VAP routinely inspects sites and requires annual reporting to insure compliance with the activity and use limitations in the covenant. The protections of the VAP, including the environmental covenant, sufficiently address any public health concerns from contamination at the site.

Comment III.A.-D.: The proposed facility would be a major source of air pollution for the surrounding community and the Ohio River Valley and the emissions include large amounts of NOx, PM2.5 and VOCs, all of which are known to negatively impact human health. Residents of Belmont County are particularly vulnerable to air pollution. Belmont County has an older population, 17% of county residents are in poor or fair health, 9 percent of babies born have a low birthweight, 10 percent of adults and 10 percent of children have asthma and the county exceeds the state rate of deaths due to heart disease, chronic lower respiratory disease, stroke, and malignant neoplasms.

Response III.A.-D.: The air permitting process involved an evaluation with computer simulated modeling demonstrating the emissions from the PTTGCA Petrochemical Complex would conform with NAAQS. The Clean Air Act requires U.S. EPA to establish NAAQS that provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children and the elderly. NAAQS have been established for "criteria" pollutants which include NOx and PM2.5. VOC emissions are addressed as precursors to the criteria pollutant Ozone.

NAAQS standards are set at a level to protect public health, including the health of at-risk populations, with an adequate margin of safety. In selecting a margin of safety, U.S. EPA considers such factors as the strengths and limitations of the evidence and related uncertainties, the nature and severity of the health effects, the size of the at-risk populations and whether discernible thresholds have been identified below which health effects do not occur.

In all NAAQS reviews, U.S. EPA gives particular attention to exposures and associated health risks for at-risk populations. Standards include consideration of providing protection for a representative sample of persons



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

comprising at-risk populations rather than to the most susceptible single person in such groups. Even in areas that meet the current standards, individual members of at-risk populations may at times experience health effects related to air pollution.

U.S. EPA periodically conducts comprehensive reviews of the scientific literature on health and welfare effects associated with exposure to the criteria air pollutants. The resulting assessments serve as the basis for making regulatory decisions about whether to retain or revise the NAAQS that specify the allowable concentrations of each of these pollutants in the ambient air.

Additionally, the impact from air toxic pollutants was evaluated to ensure emissions would not cause any significant adverse human health impact (See Response III.E.).

Comment III.E.: Ohio EPA has not required a full health impact assessment to be done to evaluate the impact of this major emissions source on the surrounding community.

Response III.E.: Inhalation is the primary route of exposure from sources such as the PTTGCA Petrochemical Complex, and for this reason Ohio EPA reviews that exposure pathway in such detail. Permitted emission levels from the PTTGCA Petrochemical Complex have been evaluated with computer simulated modeling demonstrating compliance with NAAQS that are protective of public health (see Response 2).

Ohio EPA's permitting process also evaluated toxic air contaminants from the PTTGCA Petrochemical Complex to ensure emissions would not cause any significant adverse human health impact. The regulations and requirements for evaluating air toxics (typically called air toxic analysis) are contained in OAC rule 3745-114-01 and ORC 3704.03(F)(3)(c) and (F)(4). The air toxic analysis involves a computer modeling approach to demonstrate expected concentrations conform to the MAGLC. MAGLCs are concentration screening values which are applied to determine that the level of air toxics emitted will not cause any significant adverse human health or environmental impacts. Ohio EPA has determined that when an air toxic compound is emitted at a level less than 1.0 ton per year the above modeling analysis is not required, and the level of air toxic emission will not cause any significant adverse human health or environmental impacts. Additionally, the modeling analysis above is not required for air toxic emissions which are subject to a MACT or residual risk standards under section 112 of the federal Clean Air Act. For additional information regarding the implementation of an air toxic analysis refer to Ohio EPA Engineering Guide #70 – Air Toxic Analysis which can be accessed here:

<https://www.epa.ohio.gov/portals/27/engineer/eguides/Guide70Final20170509.pdf>

Comment IV.: Ohio EPA has not conducted any analysis to assess the indirect and cumulative GHG emissions that would inevitably occur from increased natural gas production and natural liquids production and infrastructure in the region.

Response IV.: As indicated in Response 10 under I., regulating emissions of GHGs through PSD rules is the only legal mechanism Ohio EPA has to address GHGs. Ohio EPA does not possess the legal authority to evaluate additional GHG emissions that might come from the increased demand for natural gas. For additional information regarding Ohio EPA's GHG permitting program refer to Ohio EPA Engineering Guide #85 which can be accessed here:

<https://www.epa.ohio.gov/Portals/27/engineer/eguides/guide85.pdf>

Comments V.C. and VI.A.: Valid air dispersion modelling is dependent on accurately estimating the amount of air contaminants that the proposed plant will release. There are extensive errors in the application and draft permit which cause these emissions to be underestimated. There are three components to this problem: 1) inexplicably inconsistent values in the Air Emissions Inventory, 2) failures to address predictable periodic



emissions spikes in calculating PTE and 3) utilizing unreliable emissions factors based on unsupported assumptions.

If there are underlying assumptions supporting the differing PTE values for these identical emission sources, at a minimum those assumptions need to be made express and practically enforceable through firm operational restrictions, monitoring and record keeping in the permit. Otherwise, the draft permit as presently constituted is an open invitation to predictable emissions exceedances and NAAQS violations.

a) The first example of this pattern (on p. 2 of Appx. C) is the NOx PTE for the six cracking furnaces which show identical operating parameters. But while five furnaces are assigned an hourly NOx emission rate of 5.52 lb/hr, the sixth furnace is assigned an hourly rate of 2.76 lb/hr with no justification provided.

Response VI.A.a): All six furnaces have a NOx PTE of 5.52 lbs/hr for normal operation. There is no 2.76 lbs/hr rate for NOx for any furnace, although the PTE table does include different NOx emission rates for other operating modes. Note that the company has updated its startup and shutdown emission rates to 7.20 lbs NOx/hr because the SCR continues to operate and control the NOx emissions until the furnace firing rate drops to below 145MMBtu/hr (HHV). The company's original emission estimate and the limit in the draft permit was based on the SCR not operating during startup and shut down at firing rate of 552MMBtu/hr, which is not correct. This limit has been corrected in the permit.

b) Similarly, the three identical Package Boilers have unexplained variances in which Boiler 3 is assigned an emissions rate of "0" for annual NOx, PM, PM10, PM2.5, CO, SO2, VOC, HAPs and CO2e, while there are also numerous differences between the emissions rate for Boilers 1 and 2 that are not explained in the application. PTE values for these boilers should be identical.

Response VI.A.b): The company only needs two boilers to provide the steam needed to operate the plant, thus maximum steam needs will inherently limit the operations to only two boilers at any given time and will thereby ensure emissions do not exceed the limits being established in the permit. However, the company has requested a voluntary restriction on fuel input to the three boilers, combined, of a maximum of 800 MMBtu/hr one-hour and 200 MMBtu/hr as rolling, 12-month average. These requirements and associated monitoring, recordkeeping and reporting have been incorporated into the final PTI.

c) The PTE values assigned to the Thermal Oxidizers demonstrate this same problem with Thermal Oxidizer 2 also being assigned a PTE of "0" for all emissions categories. To the extent that this reflects the intent that only one of these Thermal Oxidizers may be used at any one time, the application provides no engineering details on how this would be accomplished as a practical matter. It is impossible to not have periods of time when both Thermal Oxidizers are operating, even if one is intended to be a "spare."

Response VI.A.c): PTTGCA has sized the thermal oxidizers such that one thermal oxidizer can handle the maximum gases that would be vented to it from the various sources. The purpose of the backup thermal oxidizer is to ensure there is adequate control capability when one of the thermal oxidizers is off-line. Since there would not be enough gas generated to run both oxidizers, it would not be reasonable to base PTE on both oxidizers operating at the same time, beyond pilot emissions. The various NSPS and MACT rules applicable to the thermal oxidizers spell out how these controls must be operated. This detail will be added if/when a Title V operating permit is processed for the facility.

Comment VI.B: The HP and LP flare emissions will be significantly higher during routine maintenance, start-up and shutdown, as well as when in malfunction, and the potential emissions do not take into account higher emissions during these periods.



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

Response VI.B: The allowable emissions in the permit for the HP and LP flare represent emissions during normal operation which is when the cracking furnaces are producing ethylene. During normal operation when ethylene is being produced, emissions from the flares are due to the combustion of gas for pilot light and purge gas operations. The PTTGCA Petrochemical Complex utilizes off-spec ethylene storage which eliminates the flaring normally experienced at ethylene cracking plants. Flaring at the PTTGCA Petrochemical Complex is anticipated only for a short duration when cracking furnace operations are required through a stabilization period when coming back online following a planned five-year turnaround maintenance event. The infrequent and short duration of flaring events will be addressed by OAC rule 3745-15-06 "Malfunction of equipment; scheduled maintenance; reporting. OAC rule 3745-15-06 would also be applied to any flaring associated with plant upsets. MACT requirements associated with startup, shutdown, and malfunction (SSM) provisions would also be applicable.

Comment VI.C.: The emissions rates assigned to sources listed in the Air Emissions inventories are consistently unreliable and unsupported. Virtually none of these rates are based on actual real world and reliable data. The result is that potential emissions from the facility are consistently underestimated for most emissions sources.

Response VI.C.: Ohio EPA always seeks to use the best information and data available to determine the potential to emit of a project. The emissions factors used to develop the emissions limitations in the draft PTTGCA permit are primarily based on BACT or licensor guarantee, so the use of these factors has been justified in the application. The calculations have been reviewed again, and Ohio EPA still considers the PTE to be accurate and acceptable. No alternative emissions rates have been suggested by the commenter to demonstrate what they consider to be adequate for the sources at this plant. The permit also has extensive emissions testing required and/or the use of continuous monitors which will be used to verify many of these emission factors.

Comment VI.D.: Virtually all the emissions factors for the individual sources at the proposed facility are based on U.S. EPA's guidance document, AP-42, a compilation of U.S. EPA's emission factor information. There are many flaws and shortcomings inherent to the use of AP-42 which are freely acknowledged in the guidance by U.S. EPA and users are accordingly cautioned by the Agency to take those flaws into account. These caveats, however, are neither recognized nor respected in this application and, as a result, the emissions predicted are flawed and underestimated.

The primary limitation on the use of AP-42 for PTE calculations is that their factors are designed only to approximate average emission rates, not the maximum emission rate necessary to appropriately calculate PTE for permitting purposes.²¹ While AP-42 may be adequate for small emissions sources posing negligible potential health impacts, the fact that AP-42 is the basis for virtually all the emissions rates for a massive chemical plant in a confined river valley is grossly unsound and a serious misuse of AP-42's intended purpose.

The proposed chemical plant is especially prone to short-term spikes in emissions such as during the maintenance, start-up, shut-down and malfunction conditions discussed above. The problem of short term or peak emissions are identified in AP-42 as a special cause for not relying on AP-42 rates.

Rather than rely on these admittedly flawed average emission factors, the applicant should be required to base its calculations on specific emissions testing of the actual emissions sources to be employed at the facility either based on their design or by adjusting the average AP-42 emission factors to reflect maximum conditions, or both. Any real-world source of data directly considering the source specific nature of the facility would likely be more reliable than AP-42. None of this was done and, according to AP-42 itself, the emissions factors used to model the facility's emissions are inherently unreliable and give no confidence that the facility is properly modeled.



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

Response VI.D.: See response VI.C. above. AP-42 factors were used only when no vendor guarantee, BACT or other widely-accepted emission rate or calculation method (e.g., mass balance for SO₂) was available. The pollutants emitted at the highest rates (NO_x, CO, VOC, particulate) from the largest sources are based on BACT as demonstrated in PTTGCA's BACT analysis. The company's BACT analysis did cover emissions data from similar emissions sources, and the vendors will be required to design the equipment to meet the BACT emissions limitations.

Comment VI.E.: Chapter 1.4 of AP-42 specifically addresses "Natural Gas Combustion." The applicant used this chapter of AP-42 for assigning emission rates to the Ethane Cracker Furnaces and Boilers at the facility that are fueled by natural gas, including for setting their emissions rates for NO_x, PM and toxic compounds. However, AP-42 clearly acknowledges in Tables 1.4-2 and 1.4-3, which were explicitly used by the applicant to establish these rates, that these emissions factors are especially unreliable. This was done by assigning an "Emission Factor Rating" to each emission rate which is designed to rate the reliability, or "robustness," of that factor. These Ratings range from A as 23 best to E as worst ("poor" and not reliable). The Emission Factor Rating in Table 1.4-2 rates the reliability of the N₂O emission factor as "E", PM (total and condensable) as "D", and VOCs as "C." Table 1.4-3 lists the Emission Factor Rating for twenty-six (26) toxic organic compounds resulting from natural gas combustion, with one receiving a "C," two a "D" and the remaining twenty-three (23) the lowest grade of reliability "E." In other words, for most toxics, using AP-42 is little better than merely guessing.

Chemical plants burning natural gas are therefore a particularly inappropriate misuse of AP-42 emission factors – especially one in a river valley that can trap and concentrate emissions in its unique, but currently undefined, meteorological and topographical setting. The application must address this issue of reliability before it is acted on by the Director, which can only be accomplished by confirming the emissions factors through direct testing or other real-world evidence.

Response VI.E.: As indicated in Response VI.D. above, AP-42 factors were *not* used to calculate NO_x and particulate emissions from the cracking furnaces or boilers; those limits are based on BACT or licenser guarantee. AP-42 factors were used to calculate the toxic compound emissions, but Ohio EPA was not presented with nor did it find any better emissions factor information for those pollutants and none were provided by the commenter. Note that the MACT rules applicable to the combustion sources do not establish numeric limits for hazardous air pollutants from burning natural gas, so it is Ohio EPA's position that the risk from HAPs from these combustion sources is likely very low and are likely adequately characterized using the AP-42 factors. These factors were not used to set any limits for the toxic air contaminants.

Comment VI.F.: The application assumes very high destruction efficiencies for both the flares and thermal oxidizers but provides no reliable justification for those values.

Response VI.F.: The control efficiencies were established by PSD regulations which require the application of BACT. BACT is determined through an analysis involving a "5-Step Top Down Process" which includes evaluating control effectiveness. The flare and thermal oxidizer destruction efficiencies of 98 percent and 99.5 percent, respectively, established as BACT are consistent with control requirements that have been established as BACT at other petrochemical facilities and are listed in U.S. EPA's RACT/BACT/LAER Clearinghouse. Additionally, federal rules such as NSPS and MACT recognize flares achieve 98 percent if they are designed and operated in accordance with rule requirements.

The permit requires compliance with the established destruction efficiencies be demonstrated in accordance with U.S. EPA-approved procedures and methodologies. Additionally, the permit requires thermal oxidizers demonstrate ongoing compliance with control performance by maintaining minimum temperature values established during compliance testing. Flares also are required to assure ongoing compliance with control



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

requirements by assuring the presence of a pilot flame at all times. The monitoring requirements above adhere to USEPA compliance monitoring requirements as well as monitoring required in federal NSPS and MACT regulations.

Comment VI.G.: The application assumes a very high level of control of 97 percent removal efficiency using the TCEQ LDAR program. LDAR programs including TCEQ LDAR are unreliable and technically obsolete and the permit should incorporate optical gas imaging as BACT in the permit.

Response VI.G.: Optical gas imaging (OGI) technology continues to advance but its use is not required by air pollution regulations addressing fugitive leaks. OGI has been presented as an option in recent revisions of fugitive leak regulations and USEPA made a direct comment regarding this permit that "Ohio EPA should consider adding the option to use optical gas imaging cameras as an alternative work practice for leak detection requirements in 40 CFR Parts 60, 61, and 63, as provided in the general provisions of those parts." (See Appendix Comment 1.h.). OGI is presented as an option and there are many considerations to make when electing to use OGI technology. As an example, for OGI to be effective an operator must fully understand the techniques for camera functionality, monitoring methods, and key environmental that could affect monitoring. Weather, industrial environment, viewing distance are all factors that need to be considered when evaluating the use of OGI. OGI does present advantages compared to an LDAR program and as such Ohio EPA has determined that the employment of an LDAR program consistent with federal fugitive leak regulations and enhanced connector monitoring along with providing OGI as an alternative option represents BACT.

The BACT requirement to implement an LDAR program is consistent with federal fugitive leak regulations and enhanced connector monitoring which is documented and reflective of a 97% reduction in fugitive emissions. The "Audio/Visual/Olfactory" program referred to in the comment is only applicable for inorganic/odorous and low vapor pressure compounds and as such would not appear to present a direct comparison to other LDAR programs and provide for a basis to consider the TCEQ LDAR program unreliable.

Comment VI.H.: The calculation for GHG emissions from the facility is flawed and underestimates the GHG PTE of the facility. The flaw in the application is that the time period it uses is a 100-year GWP to calculate CO₂ equivalence and does so using an older value of GWP found in an earlier 2007 Assessment Report (AR) of the Intergovernmental Panel on Climate Change (IPCC). A shorter 20-year GWP is also available and is more appropriate in the current instances, given that the plant life is not intended to be 100 years and that the impacts of methane will be felt most within a decade or two after being emitted. To accurately calculate this value for this facility, the Director should require these values to be recalculated on a 20-year GWP, using current values.

Response VI.H.: PTTGCA used the Global Warming Potential for CH₄ and N₂O from 40 CFR Part 98 Table A-1 published in the Federal Register Vo. 79, No. 238 December 11, 2014, which is consistent with the other most recent ethane crackers in the United States. PTTGCA also used the standard natural gas CO₂, CH₄, and N₂O emission factors published in 40 CFR 98, Tables C-1 and C-2 (HHV basis) in calculating annual emissions. This is also consistent with the other most recent ethane crackers in the United States.

Comment VII.A.: The commenter stated that emissions testing of VOC, PE/PM10/PM2.5 and CO₂e from the cracking furnaces on a five-year basis is not sufficient to assure compliance with the terms and conditions. They believe the draft permit violates 40 USC 7661c(c) and 40 CFR Part 64. They stated that it is common and recommended practice for periodic stack tests to be completed at least annually.

Response VII.A.: Ohio EPA, like other state, federal and local permit agencies, use a wide range of techniques to assure compliance with emission limits and other restrictions placed in air pollution permits. These techniques can range from the use of continuous monitors that continuously measure emissions from exhaust



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

stacks, the use of periodic emissions testing (annual, every three years, every five years, every 10 years, initial only), monitoring of operational parameters (temperature, pressure drop, liquid flow, production rate, etc.), simple record keeping and reporting, and simple reliance on available emission factors.

The technique used, or compliance method, chosen is detailed in the permit typically under the Testing Section.

In the case where the applicable rule prescribes the compliance method required, Ohio EPA requires the rule-required compliance method to be used.

In the case where the applicable rule does not prescribe the compliance method required, Ohio EPA uses its experience and judgment to decide on the appropriate compliance method. Ohio EPA requires the more rigorous methods to be used for the very large sources, the less rigorous methods to be used for the smaller sources.

In the case of the VOC, PE/PM10/PM2.5, and CO₂e emission limits established for the cracking furnaces, there is no rule or law that describes the exact compliance method that must be used. 42 USC 7661c(c) does not prescribe the exact compliance method that must be used, instead, it uses generic language quoted by the commenter. In addition, 42 USC 7661c(c) applies to Title V permits, not the installation permit being discussed/developed here so for this installation permit, 42 USC 7661c(c) cannot be violated. 40 CFR Part 64 is called the Compliance Assurance Monitoring or CAM rule. It applies when the source uses a control device to achieve compliance with an emission limitation or standard. The only control device used for each cracking furnace is a Selective Catalytic Reduction (SCR) device used to control NO_x. Ohio EPA has established extensive monitoring, record keeping, reporting and testing requirements that meet the requirements of CAM. So, Ohio EPA does not agree with the commenter's statement that the draft permit violates these two rules.

Because no rule or law prescribes the exact compliance method that must be used, Ohio EPA makes its best judgments concerning the appropriate method that must be used. For the cracking furnaces, Ohio EPA required initial testing of VOC and PE/PM10/PM2.5. The initial testing does not describe the frequency of future testing. Instead, the frequency of future testing will be described in the operating permit (called the Title V permit). The decision concerning the frequency of testing will depend upon a number of factors including the ease at which the emission limit was passed during the initial test, and the significance of the emissions. The frequency decision depends upon some judgement, but Ohio EPA typically utilizes our Engineering Guide #16 to help decide future emissions testing frequency. Engineering Guide #16 is specifically designed to determine appropriate emissions testing frequency based on the amount of emission and the ease at which compliance was shown.

For CO₂e, no periodic testing is required for the cracking furnaces. Instead, CO₂, the main CO₂e component emitted by the cracking furnaces, is monitored on a continuous basis.

The commenter's statement that "It is common and recommended practice for periodic stack tests to be completed at least annually..." is simply not true. Instead, annual stack test compliance requirements are only used for the very large sources and are used only in a small fraction of the air pollution sources permitted. For example, annual emissions testing is required much more often for very large air pollution sources like utility coal-fired boilers when continuous monitors are not used. These types of sources typically emit tens of thousands of tons of criteria pollutants, not the 100 to 500 tons/yr sources like PTTGCA's proposed petrochemical facility.



Finally, the Director of Ohio EPA has the authority to require testing whenever the agency believes it is necessary to obtain information on the actual emissions from the source. The testing does not have to be on the schedule identified in the permit.

Comment VII.B.: Without fenceline monitoring, there is no monitoring to ensure VOCs from fugitive emissions are not entering ambient air at levels that will endanger the health, safety, and welfare of the surrounding community.

Response VII.B: There is no rule or law that requires fenceline monitoring for this type of facility. As such, the permit does not require fenceline monitoring. However, fugitive VOC leaks are required to be monitored and repaired by either the use of a program that requires periodic measurements of leaks from each component (known as a LDAR program), or by the periodic use of an infrared camera to visibly identify leaks. Both programs require the expeditious repair of any leaks found. These programs are standard techniques used to control fugitive leaks for many industries and have been found to be very effective in minimizing emissions from leaking components. (See Response III.E.)

Comment VIII:

a) Many of the standards and limits in the draft permit lack the specificity necessary to be enforceable as a practical or legal matter. As just one example, the draft permit includes numerous emissions limitations and standards based on mode of operation. The definitions of these operating modes lack precise parameters and do not reflect actual operations of a facility of this type and magnitude. For example, "startup" and "shutdown" as these terms are commonly understood are misnomers in the context of a petrochemical plant, where startup and shutdown are routine and frequent occurrences and better described as a part of normal operations since they are integral to the operation of such plants. By carving out exceptions for these modes of operating and vaguely defining them or not defining them at all, the draft permit makes many limits and standards in the permit unenforceable.

Response VIII.a): Ohio EPA does not agree that the permit standards and limits lack the specificity necessary to be enforceable. The cracking furnaces are the only units with alternate limits for non-normal modes of operation. This approach is consistent with how other large combustion sources such as combined cycle combustion turbines are routinely permitted in Ohio, where the operating modes are defined by the turbine manufacturer. The purpose of defining the various operating modes for the cracking furnaces is to define when the alternate emissions limits apply. These are not exceptions; instead they are alternate limits that are needed to account for the differences in operating parameters like heat input and operation of controls like SCR. The permit requires the company to demonstrate compliance with these limits via continuous emissions monitoring (NOx and CO) or stack testing (particulate).

In the absence of evidence provided by the commenter to demonstrate that the operating mode definitions are incorrect, it is Ohio EPA's position that the company's experience with cracking furnaces at their other facilities provides it with the best knowledge of this type of facility and how to define each furnace's status of operation at any given time.

b) The definition of "startup" in the draft permit allows this operating mode to continue for 24 hours at a time for each furnace and defines the mode as existing from the time fuel is introduced to the furnace to when the SCR catalyst bed reaches its "stable operating temperature" which is not defined. This places no limit on how frequently the furnaces may be in startup mode nor does it provide specific parameters for what constitutes stable operating temperature or how to assess when this temperature has been reached. Similarly, the draft permit defines "shutdown" as the time period from when the SCR catalyst bed first drops below its stable operating temperature to when fuel is removed from the furnace, again providing no enforceable parameters



for identifying when this mode is actually occurring. There is no time limitation on how long a furnace may operate in shutdown mode. The definition of “normal operations” states it is when all six furnaces are operating in parallel and about 65 percent of ethane feed is converted to ethylene and its derivatives. As discussed in earlier sections of this Comment, PTTGCA’s application applies specific assumptions based on operating mode. Accordingly, all assumptions used in the application for each operating mode should be included as enforceable parameters in the definition for that operating mode that is contained in the draft permit.

Response VIII.b): Ohio EPA has determined there is no need to place limits on the hours of operation in any mode of operation of the cracking furnaces. PTTGCA’s application presents the PTE of the cracking furnaces based on the maximum number of hours each furnace would operate in each mode based on its experience and vendor O&M procedures, and this evaluation is the basis of the rolling, 12-month limits across the six cracking furnaces. To ensure compliance with these BACT limits, the permit requires that PTTGCA record the hours of operation of each furnace in each operating mode, and use the CEMS data or the emissions factors (or most recent stack test data) for each mode to calculate compliance with the rolling, 12-month limits, on a monthly basis.

c) Together, the operating mode definitions create significant ambiguity as to what definition will apply to a given set of actual operations. This is unacceptable given that many of the permit limits apply only to certain operating modes. For example, for the ethane cracking furnaces, the rolling 12-month average limit for NOx and the hourly maximum limit for NOx both exclude periods of startup, shutdown, and hot steam standby. The lack of specific parameters to define operating modes makes these critical limits in practice unenforceable, as the operator has immense flexibility to argue the furnaces were operating in a mode exempt from the emissions limit. This is particularly concerning given the likelihood that the facility will violate NOx standards, and the NOx hourly maximum limitation in particular, as detailed in earlier sections of this comment. The lack of enforceability created by poorly defined operating modes is a violation of 42 USC 7661c(a).

Response VIII.c): The operating modes are defined in the permit not to exempt those modes from any limits, but to define when the alternate limits for those modes apply. The permit includes separate short-term limits for NOx for normal operations and for periods of startup, shutdown, and hot steam standby. The rolling, 12-month limit on NOx does include startup, shutdown and hot steam standby emissions. CEMS will be used to monitor NOx emissions, and that data, or data from the stack testing required for NOx in non-normal operating modes, will be used to calculate compliance with both the short-term and the rolling, 12-month BACT limits, and the permittee must submit quarterly reports to document its compliance status with the rolling, 12-month limits.

d) The draft permit’s use of vague and undefined terminology to the degree it renders some limitations and standards unenforceable is not limited to issues with operating modes, but also extends to those permit limits and standards invoking BACT, where the BACT for a given source and pollutant is defined without specificity, but instead using terms such as “proper design,” “good combustion practices,” and “energy efficient combustion,” all of which lack the clear (i.e., quantitative) parameters necessary for enforcement. The permit must include enforceable emission limitations and standards for every input and assumption relied upon in PTTGCA’s application.

Response VIII.d): The BACT requirements in this permit are not just operational requirements. For each pollutant subject to BACT, the permit contains short-term and rolling, 12-month emissions limitations that must be met by implementation of those work practices or control requirements where applicable. The company will be required to demonstrate compliance with those limits via CEMS or stack testing, and any exceedances of those limits would be addressed following Ohio EPA’s enforcement procedures.



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

Comment IX.A: The use of SCR for NOx control for the Cracker Furnaces is an acceptable choice of technology, but the limitation of just a 90 percent control efficiency (Draft Permit, p. 24) is not justified and was not supported by a proper BACT analysis. The use of the 90 percent figure is particularly unwarranted given the unique benefit of SCR technology that its efficiency can be improved to very high levels well above 90 percent, for example, by the addition of more catalyst. Many examples exist of SCR control efficiencies of 95 percent and higher.

Setting the proper control efficiency in a BACT analysis is a design and cost issue determined by plotting a graph of more catalyst for greater efficiency against increasing cost. The optimal point on this graph for setting BACT is where diminishing returns in greater efficiency no longer justify continued increases in cost. To undertake this analysis requires a cost review as provided in Step 4 of the five-step top-down BACT process. However, no such cost analysis was performed to determine the proper level of control, and the BACT analysis is fundamentally flawed as a result. This failure may be substantial, as a control efficiency of 95% for the SCR, which is not uncommon, would cut the furnaces' NOx emissions in half.

Response IX.A.: SCR NOx removal efficiencies greater than 90 percent are from natural gas fired boiler steam generation and turbine electricity generation installations. Cracking furnaces are more complex in terms of design and operation which includes the following: 1) composition of feedstock (primarily tail gas supplemented by natural gas); 2) furnace configuration (long and narrow which results in reduced mixing of flue gas); 3) operational variations which results in a wide range of SCR operating parameters including flue gas temperature, flow rate, flue gas composition and distribution); 4) higher firebox temperatures than natural gas fired turbines or boilers, 5) particulate fouling of catalyst which already requires greater catalyst volume than natural gas fired boilers and turbines and 6) poisoning of the catalyst from the deterioration of the radiant tubes.

Further, the BACT rules do not specifically require a top-down analysis, nor do they require the analysis suggested in the comment letter.

Comment IX.B.: The BACT analysis does not properly address OGI technology for fugitive emission control.

Response IX.B: Ohio EPA has determined that implementation of the TCEQ 28 LAER LDAR program represents BACT. The TCEQ 28 LAER LDAR program is consistent with federal fugitive leak regulations that are contained in New Source Performance Standards (NSPS) and Maximum Achievable Control Technology (MACT) regulations and also includes enhanced connector monitoring. The TCEQ 28 LAER LDAR program was determined to meet Lowest Achievable Emission Rate (LAER) requirements as a technology transfer for fugitive emissions control in the nonattainment new source review (NNSR) permit issued to Shell Chemical Appalachia LLC ("Shell"). USEPA's New Source Review Workshop Manual provides guidance on determining BACT and indicates that "an applicant proposing the top control alternative need not provide cost and other detailed information in regard to other control options". The establishment of the TCEQ 28 LAER LDAR program as meeting LAER supports the BACT analysis and determination in this permitting action.

U.S. EPA indicates that OGI represents an important new class of emission survey tools and more recent federal fugitive leak regulations have presented OGI as an alternative option for meeting rule requirements for leak detection. As indicated in an earlier response (See response to Comment 9), U.S. EPA made a direct comment regarding this permit that "Ohio EPA should consider adding the option to use optical gas imaging cameras as an alternative work practice for leak detection requirements in 40 CFR Parts 60, 61, and 63, as provided in the general provisions of those parts." Ohio EPA has determined that providing OGI as an alternative option to the implementation of the TCEQ 28 LAER LDAR program meets BACT as required by "Prevention of Significant Deterioration" regulations. The permit allows PTTGCA to use either the TCEQ 28 LAER LDAR program or the OGI program.



Comment X.: The commenter noted that in the application materials, PTTGCA identified some of the data as subject to change based on final design information from the vendors. Since the design information is not final, the commenter felt that the Director should not issue the permit.

Response X.: Ohio EPA's experience is that for large, complex projects such as for the PTTGCA facility, it is common for the final permit to be issued before all of the details of some of the equipment are finalized. In most cases, the larger sources are well defined and understood. Because state and federal regulations require that a permit be issued prior to initiation of construction, not every detail on a large chemical complex will be finalized prior to permit issuance.

All of the equipment that is built must be constructed to ensure the equipment meets the emission limits in the permit. These limits are established in the permit and must be met even if the vendor information changes.

There is no rule or law that prohibits the Director from issuing a permit where vendors have not yet been selected.

VI. Topic: Modeling Comments

a) Ohio EPA engaged in early outreach with U.S. EPA Region 5 regarding the modeling submittal. As a consequence of this outreach, U.S. EPA Region 5 provided initial comments on the modeling, the vast majority of which are replicated in the formal comments letter received by Ohio EPA on 12/11/18. In consultation with the company and its consultants, Ohio EPA decided that the best way to address those early comments was to have a second round of modeling conducted, reflective of all comments submitted by Region 5. Therefore, the majority of responses below will refer to that revised modeling. The results of the revised modeling, in comparison to the original submittal, are presented in the tables at the end of this section.

Appendix Comment 2.a.i.: The draft permit limits NOx emissions to 7.45 lb/hr during normal operations. However, the 1-hour NO2 analysis models each furnace at 5.55 lb/hr.

Response 2.a.i.: Revised modeling was submitted with a NOx emission rate of 7.45 lbs/hr for each cracking furnace.

Appendix Comment 2.a.ii.: The draft permit limits annual NOx emissions to 144.00 tons/yr for all furnaces combined. However, the annual NO2 analysis models the furnaces at 138 tons/yr combined.

Response 2.a.ii.: Revised modeling was submitted with an annual NOx emission rate of 144.00 tons/year for all furnaces combined.

Appendix Comment 2.a.iii.: The permit limits PM10 and PM2.5 to 71.89 tons/yr from all furnaces. However, the annual PM10 and annual PM2.5 analysis models the furnaces at 68.8 tons/yr combined.

Response 2.a.iii.: Revised modeling was submitted with annual combined emissions of 71.89 tons/yr of both PM10 and PM2.5.

Appendix Comment 2.b.i.: The draft permit limits NOx emissions to 8.76 tons/yr for all package boilers combined. However, the annual NO2 analysis models the furnaces at 8 tons/yr combined.

Response 2.b.i.: Revised modeling was submitted with a combined annual NOx emission rate for all package boilers of 8.76 tons/yr.



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

Appendix Comment 2.b.ii.: The draft permit limits PM10 and PM2.5 from the package boilers to 4.38 tons/yr, combined. However, the modeled PM10 and PM2s emissions rate corresponds to 3.83 tons/yr for all 3 boilers.

Response 2.b.ii.: Revised PM10 and PM2.5 modeling was submitted with a combined 4.38 tons/yr emission rate for the three package boilers.

Appendix Comment 2.b.iii.: Package boilers 007-009 are modeled under the assumption that two of the three boilers operate at any one time. However, the permit does not appear to restrict concurrent operation to two boilers at a time. We request that you add an operating restriction limiting operation to two of any three package boilers at one time.

Response 2.b.iii.: See Response 5b in Section b) of IX. Topic: Permit-specific Comments.

Appendix Comment 2.c.i.: The draft permit limits combustion NOx emissions of the catalyst activator furnace jackets to 0.51 lb/hr. However, the 1-hr NO2 analysis models each furnace at approximately 0.015 lb/hr.

Response 2.c.i.: Revised 1-hour NO2 modeling was submitted reflecting an hourly NOx emission rate from the catalyst activator furnace jackets of 0.51 lb/hr.

Appendix Comment 2.c.ii.: The draft permit limits NOx emissions from both furnaces combined to 4.47 tons/yr. However, the annual NO2 analysis models furnaces 023 and 024 at 0.14 tons/yr combined.

Response 2.c.ii.: Revised annual NO2 modeling was submitted reflecting a combined emission rate of 4.47 tons/yr.

Appendix Comment 2.c.iii.: The draft permit limits PM10 and PM2.5 to 0.1 lb/hr and 0.44 tons/yr. The 24-hour and annual PM10 and PM2.5 analysis models non-combustion emissions, but does not appear to model combustion emissions.

Response 2.c.iii.: Revised short- and long-term modeling for both PM10 and PM2.5 was submitted reflecting a conservative short-term emission rate of 0.14 lbs/hr and an annual emission rate of 0.613 tons/yr.

Appendix Comment 2.c.iv.: The CO SIL analysis does not appear to include furnaces R-201A and R-201B. CO emissions are limited to 0.43 lb/hr for each furnace and 3.74 tons/yr for both furnaces combined.

Response 2.c.iv.: A revised CO SIL analysis was submitted reflecting a 3.76 tons/yr combined CO emission rate and a 0.43 lbs/hr short-term emission rate. This revision did not change the conclusion that the project is insignificant with respect to CO impacts.

Appendix Comment 2.d.i.: The permit states that the allowable limit applies to 5 individual vents, but it appears that this should instead apply to six individual vents. The air quality analysis appears to model six vents.

Response 2.d.i.: The modeling is reflective of the actual facility design of six vents per unit. Ohio EPA has corrected the permit to indicate that there will be six vents for each unit in question.

Appendix Comment 2.d.ii.: The permit limits PM10 and PM2.5 to 0.001 lb/hr for each vent. However, the 24-hour PM10 and PM2.5 analysis models each vent at 0.00016 lb/hr.



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

Response 2.d.ii.: Revised 24-hour PM10 and PM2.5 modeling was submitted reflecting an emission rate of 0.001 lbs/hr for each vent.

Appendix Comment 2.d.iii.: The permit limits PM10 and PM2.5 to 0.0044 tons/yr for each vent. However, the annual PM10 and PM2.5 analysis models each vent at 0.0007 tons/yr.

Response 2.d.iii.: Revised annual PM10 and PM2.5 modeling was submitted with a revised annual emission rate of 0.0044 tons/yr.

Appendix Comment 2.e.i.: The pellet and off-spec blend/silo vents appear to be modeled at 0 g/s for both the 24-hour and annual PM10 and PM2.5 analysis. The permit limits PM10 and PM2.5 to 0.088 lb/hr and 0.386 tons/yr for each individual vent.

Response 2.e.i.: PTTGCA will only physically be able to load two silos on each of the HDPE Lines 1 and 2 and the LLDPE/HDPE Lines 3 and 4. Accordingly, the emission rates for 10 of the 12 silos for HDPE Lines 1 and 2 and 12 of the 14 silos on LLDPE/HDPE Lines 3 and 4 are set at 0 based on this limitation. Further, as noted in Response 2.h.iii., the permitted emission rates of 0.088 lb/hr and 0.386 TPY for the pellet and off-spec blend silo vents are incorrect. The emission rates in the permit have been corrected and the permit limits match the modeled emission rates.

Appendix Comment 2.e.ii.: It is not clear whether vents PE1-19 and PE2-19 were included in the PM10 and PM2.5 analysis. The permit similarly limits PM10 and PM2.5 to 0.088 lb/hr and 0.386 tons/yr for each vent.

Response 2.e.ii.: See Response 2.e.i., above.

Appendix Comment 2.f.i.: The permit limits PM10 and PM2.5 to 0.134 lb/hr for each vent. However, it appears that each vent was modeled at 0.024 lb/hr in the 24-hour PM10 and PM2.5 analysis.

Response 2.f.i.: Revised short-term PM10 and PM2.5 modeling was submitted reflecting a PM emission rate of 0.134 lbs/hr.

Appendix Comment 2.f.ii.: The permit limits annual PM10 and PM2.5 to 0.587 tons/yr for each vent. However, it appears that each vent was modeled at 0.108 tons/yr in the annual PM10 and PM2.5 analysis.

Response 2.f.ii.: Revised annual PM10 and PM2.5 modeling was submitted reflecting an emission rate of 0.587 tons/yr for each vent.

Appendix Comment 2.g.: The 1-hour NO₂ National Ambient Air Quality Standard (NAAQS) analysis appears to model project emissions using annual NO₂ emission rates. For the following emissions units, we request that you verify the modeled emission rates used in the 1-hour NO₂ NAAQS analysis or provide justification explaining why the modeled emission rates are correct: Furnaces 001-006, Package Boilers 007-009, OSBL Thermal Oxidizer 010, and WWTP Thermal Oxidizer 012.

Response 2.g.: The short-term NO_x emission rates for these units were corrected in the revised modeling submittal as follows:

Furnaces 001-006: original rate of 5.24 lbs/hr each; revised rate of 7.45 lbs/hr each

Package Boilers 007-009: original rate of 1.83 lbs/hr combined; revised rate of 8.0 lbs/hr combined

OSBL Thermal Oxidizer 010: original rate of 0.56 lbs/hr; revised rate of 0.61 lbs/hr

WWTP Thermal Oxidizer 012: original rate of 0.087 lbs/hr; revised rate of 0.098 lbs/hr

Appendix Comment 2.h.: Several vents and other emissions units are required to meet short term and annual PM10 and PM2.5 emission limits established in the permit, but it is not clear which modeled point sources correspond to each emissions unit. We request that you verify whether the following emissions units are included in the analysis at the allowable emission rate. If these emissions units are not included in the analysis, then we request that you either add the emissions units to the analysis or provide justification for excluding them.

- i. Receiver bin filter vent Y-5657
- ii. Seed bed filter vents Y-5651 through Y-5655
- iii. Process vents in conditions C.6.b)(2)b.i- iii and C.7.b)(2)b.i- iii (pgs.104-105 and 116-117), including:
 - a. Catalyst vent filters Y-4901 and Y-4902
 - b. Granular resin surge hopper vent filters D-6210 and D-6510
 - c. Bag dump stations/dump hoppers vent filters Y-6231 - Y-6235 and Y-6531 - Y-6535
 - d. Talc surge bin filters Y-6251 and Y-6551
 - e. Mixer vent filters Y-6260 and Y-6560
 - f. Pellet conveying hoppers PE3-07 and PE4-07
 - g. Pellet hoppers PE3-08 and PE4-08
 - h. Pellet blending/off-spec blending silos PE3-09 - PE3-15 and PE4-09 - PE4-15
 - i. Pellet dryer vents Y-7010 and Y-7310

Response 2.h.: Revised modeling was submitted to account for PM emissions from the above listed sources. The emission rates listed are those modeled and are reflective of the rates in the draft PTI. The modeled PM emissions are as follows:

- i. Receiver bin filter vent Y-5657: *Source 092, 0.08 lbs/hr and 0.35 tons/yr*
- ii. Seed bed filter vents Y-5651 through Y-5655: *As described in Appendix C of the PTI application, granular resin storage can go to either the receiver bin or to one of the seed bins, but not to both. As such, the modeling of these relatively minor emissions was conducted at the receiver bin filter vent, as described above.*
- iii. Process vents in conditions C.6.b)(2)b.i- iii and C.7.b)(2)b.i- iii (pgs.104-105 and 116-117), including:
 - a. Catalyst vent filters Y-4901 and Y-4902: *Sources 061-062, 0.035 lbs/hr each, 0.153 tons/yr each. Note that the emission rates for these sources are incorrect in the draft PTI and will be corrected to reflect the modeled emission rates.*
 - b. Granular resin surge hopper vent filters D-6210 and D-6510: *Sources 063 and 064, 0.042 lbs/hr each, 0.184 tons/yr each*
 - c. Bag dump stations/dump hoppers vent filters Y-6231 - Y-6235 and Y-6531 - Y-6535: *Sources 065 and 066, 0.0515 lbs/hr and 0.226 tons/yr each*
 - d. Talc surge bin filters Y-6251 and Y-6551: *Sources 067 and 068, 0.012 lbs/hr, 0.052 tons/yr each*
 - e. Mixer vent filters Y-6260 and Y-6560: *Sources 069 and 070, 0.009 lbs/hr, 0.0394 tons/yr each*
 - f. Pellet conveying hoppers PE3-07 and PE4-07: *Sources 073 and 074, 0.064 lbs/hr and 0.28 tons year*
 - g. Pellet hoppers PE3-08 and PE4-08: *Sources 073 and 074, 0.064 lbs/hr and 0.28 tons year*
Note that PE3-07 and PE3-08 are permitted together, as is the case for PE4-07 and PE4-08, and not as reflected in these comments.
 - h. Pellet blending/off-spec blending silos PE3-09 - PE3-15 and PE4-09 - PE4-15: *Sources 076, 078, 080, 082, 084, 086, and 088, Please see Response 2.e.i.*

i. Pellet dryer vents Y-7010 and Y-7310: Sources 71 and 72, 0.05 lbs/hr and 0.11 tons/yr each

There are also a few instances where the modeled emission rates are correct, but incorrect in the permit. Ohio EPA is working to correct these errors in the permit, but in the interest of providing a complete response to U.S. EPA's comments, these discrepancies are detailed here:

- a. Pellet blending/off-spec blending silos PE3-09 through PE3-15
- b. Pellet blending/off-spec blending silos PE3-09 through PE4-15
- c. Catalyst vent filters Y-4901 and Y-4902
- d. PE Cyclone Separator Vents PE1-20, PE2-20, PE3-16, and PE4-16
- e. PE Loading Bin Hoppers PE1-21, PE2-21, PE3-17, and PE4-17
- f. PE Railcar Loading PE1-22, PE2-22, PE3-18, and PE4-18

Appendix Comment 2.i.: We request that you verify whether the following modeled emission rates are correct. These emission rates appear to differ from the allowable emission rate due to rounding, but it is not clear whether this is the intent.

i.OSBL Thermal Oxidizers - Condition C.8.b)(2)b.iii (pg. 126)

1. CO modeled at 0.476 lb/hr, but permit limits CO to 0.51 lb/hr.
2. Annual NO₂ modeled at 2.43 tons/yr, but permit limits NO_x to 2.67 tons/yr.

ii.WWTP Thermal Oxidizer - Condition C.11.b)(1)a. (pg 151).

1. 1-hour NO₂ modeled at 0.095 lb/hr, but permit limits NO_x to 0.098 lb/hr.
2. Annual NO₂ modeled at 0.38 tons/yr, but permit limits NO_x to 0.43 tons/yr.
3. CO modeled at 0.079 lb/hr, but permit limits CO to 0.082 lb/hr.

iii.HP Flare - Condition C. 9.b)(2)b.iii, (pg. 136)

1. Annual NO₂ modeled at 0.34 tons/yr, but permit limits NO_x to 0.536 tons/yr.

iv.Annual PM10 and PM2.5 are modeled at 0.261 tons/yr, but permit limits PM10 and PM2.5 to 0.263 tons/yr.

v.Modeled road PM2.5 emissions are higher in the annual PM2.5 NAAQS analysis than in the SIL and PSD increment analysis. Although this appears to be more conservative, we suggest verifying the modeled roadway emissions.

Response 2.i.: The relatively minor nature of these discrepancies is the result of rounding. Despite the minor nature of these emission rate discrepancies, the revised modeling made the following changes:

i. OSBL Thermal Oxidizers - Condition C.8.b)(2)b.iii (pg. 126)

1. CO modeled at 0.476 lb/hr, but permit limits CO to 0.51 lb/hr.

The revised modeling reflects an emission rate of 0.51 lbs/hr.

2. Annual NO₂ modeled at 2.43 tons/yr, but permit limits NO_x to 2.67 tons/yr.

The revised modeling reflects an emission rate of 2.67 tons/yr.

ii. WWTP Thermal Oxidizer - Condition C.11.b)(1)a. (pg 151).

1. 1-hour NO₂ modeled at 0.095 lb/hr, but permit limits NO_x to 0.098 lb/hr.

The revised modeling reflects an emission rate of 0.098 lbs/hr.

2. Annual NO₂ modeled at 0.38 tons/yr, but permit limits NO_x to 0.43 tons/yr.

The revised modeling reflects an emission rate of 0.43 tons/yr.

3. CO modeled at 0.079 lb/hr, but permit limits CO to 0.082 lb/hr.

The revised modeling reflects an emission rate of 0.082 lbs/hr.

iii. HP Flare - Condition C. 9.b)(2)b.iii, (pg. 136)

1. Annual NO₂ modeled at 0.34 tons/yr, but permit limits NO_x to 0.536 tons/yr.

The revised modeling reflects an emission rate of 0.536 tons/yr.

iv. Annual PM10 and PM2.5 are modeled at 0.261 tons/yr but permit limits PM10 and PM2.5 to 0.263 tons/yr.

The revised modeling reflects annual PM10 and PM2.5 emissions of 0.263 tons/yr.

v. Modeled road PM2.5 emissions are higher in the annual PM2.5 NAAQS analysis than in the SIL and PSD increment analysis. Although this appears to be more conservative, we suggest verifying the modeled roadway emissions.

The commenter is correct in indicating that the roadway emissions were more conservative in the NAAQS assessment. Never the less, these emissions were corrected in the revised annual PM2.5 NAAQS modeling to reflect the most accurate emissions data.

As stated previously, revised modeling was submitted to address U.S. EPA Region 5's comments. Although this revised modeling necessitated additional cumulative modeling for PM10, the revisions did not change the conclusion of the modeling analysis: the project will not cause or contribute to any exceedance of a National Ambient Air Quality Standard or PSD Increment for any criteria pollutant or averaging period. The results of this modeling analysis are presented in the tables below:

Pollutant	Averaging Time	Original MAX Modeled Concentration (including background) ($\mu\text{g}/\text{m}^3$)	REVISED MAX Modeled Concentration (including background) ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
PM10	24-hr	48.37	48.33	150
PM2.5	24-hr	25.79	25.93	35
PM2.5	Annual	9.87	9.92	12
NO ₂	1-hour	169.87	180.67	188
NO ₂	1-hr SU/SD	NA	165.2	188
NO ₂	Annual	15.66	15.88	100

Pollutant	Averaging Time	Original MAX Modeled Concentration ($\mu\text{g}/\text{m}^3$)	REVISED MAX Modeled Concentration ($\mu\text{g}/\text{m}^3$)	PSD Class II Increment ($\mu\text{g}/\text{m}^3$)
PM10	24-hr	7.52	7.47	30
PM10	Annual	NA	1.17	17
PM2.5	24-hr	8.53	7.92	9
PM2.5	Annual	1.01	1.07	4
NO ₂	Annual	1.69	1.90	25

b) The 12/11/18 letter received from Richard C. Sahli with Richard Sahli Law Office LLC and Megan M.



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

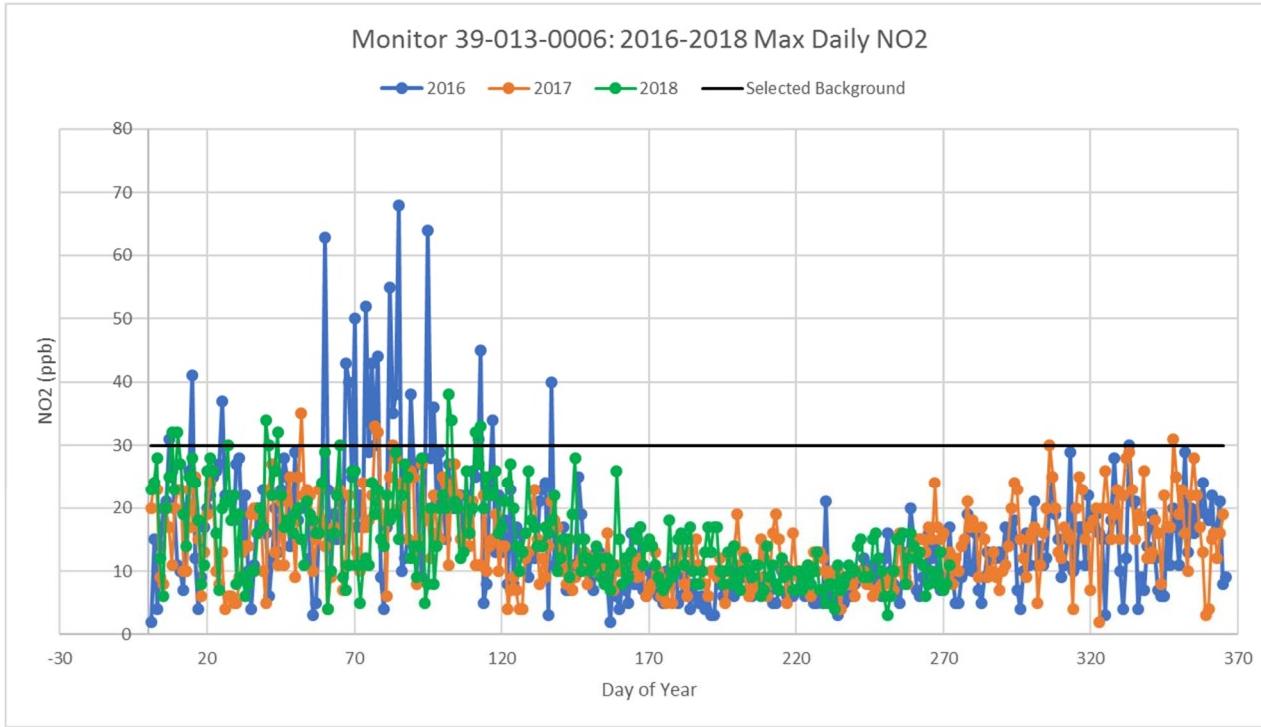
Hunter with Hunter & Hunter LLC contains the joint comments of the following organizations: Sierra Club, FreshWater Accountability Project, Earthworks, Center for Biological Diversity, Ohio Allies, Buckeye Environmental Network, Concerned Barnesville Area Residents, Mountain Watershed Association, Center for Coalfield Justice, Ohio Valley Environmental Coalition, FracTracker Alliance, Clean Air Council, and the Breathe Project. The letter contained the following modeling comments:

Comment 1: V.A., B. and D. and E. Commenter remarks that background concentrations were manipulated and treated in an “impermissible” manner to avoid the finding of NAAQS violations.

Response 1: Establishing background concentrations for any PSD project is not necessarily a straightforward analysis. Rather, careful consideration is given to the representativeness of any of the available data. U.S. EPA has established non-binding guidance for determining background concentrations for criteria pollutants, which was followed in this case.

Comment 2: Commenter remarks that the NO₂ background concentration excludes data collected in 2016 without justification.

Response 2: 2016 data for NO₂ was indeed excluded from the background determination, based on atypical spikes in the hourly monitor data at monitoring site 39-013-0006. When examining the high values in 2016, site operators noted that trains were idling near the monitor and are not representative of the overall background concentration. Never-the-less, if 2016 were included in the background determination, a new background of 33.75 ppb (63.45 µg/m³) is obtained. Applying this background to the maximum modeling concentration of the revised modeling analysis of 124.17 µg/m³, a maximum concentration of 187.62 is obtained. Although this value is close to the NAAQS value of 188 µg/m³, it is none the less still below the standard. Further, it should be noted that the 1-hour NO₂ modeling was conducted using Tier 2 methods and is therefore more conservative than what would be obtained should a Tier 3 methodology been applied. Additionally, by applying a fixed background concentration to every hour of modeled data adds an additional layer of conservatism. That is, the submitted modeling analysis assumes that the monitored design value concentration is present at every significant receptor for every hour of a five-year period. Even a cursory examination of the hourly NO₂ monitoring data in this area would indicate that this is not true. Ohio EPA continues to operate the monitor at Shadyside and has not observed higher values since 2016. The graph below shows daily maximum values of NO₂ at the Shadyside monitor:



As shown in the graph above, the anomalous spikes in the 2016 have not been observed. Note also the black line indicating the background concentration that was applied in the model and the relatively few days in which any hour of monitored concentration exceeded 30 ppb.

Comment 3: The commenter remarks that an inappropriate PM2.5 background was applied.

Response 3: Ohio EPA understands that PM2.5 is a “regional” pollutant, with both a primary-emitted component and a secondarily formed component. Therefore, it is perfectly reasonable to establish a PM2.5 background based on regional monitoring data that is representative of not only the more populated Moundsville, WV area, but also the less-populated areas near the project. However, the commenter rightly indicates that even if the more conservative background concentration of 9.6 $\mu\text{g}/\text{m}^3$ is used, a maximum concentration below the annual PM2.5 NAAQS is obtained. Indeed, when this value is added to the maximum modeled concentration from the revised modeling, 1.12 $\mu\text{g}/\text{m}^3$, an annual PM2.5 concentration of 10.72 $\mu\text{g}/\text{m}^3$ is obtained. Again, this value remains below the annual PM2.5 NAAQS of 12 $\mu\text{g}/\text{m}^3$.

Were the most conservative background values as presented in the modeling protocol applied to the revised modeling results, the following concentrations would be obtained:

Pollutant	Averaging Period	Modeled Impact ($\mu\text{g}/\text{m}^3$)	Most Conservative Background ($\mu\text{g}/\text{m}^3$)	Total Impact ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
PM10	24-hr	7.33	122	129.33	150
PM2.5	24-hr	6.13	22.1	28.23	35
PM2.5	Annual	1.12	9.6	10.72	12
NO ₂	1-hour	124.17	63.45	187.62	188



NO2	Annual	3.08	13.16	16.24	100
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For every pollutant and averaging period for which the project is significant, application of the most conservative (and unrealistic) background yields concentrations below the NAAQS.

Comment 4: The commenter asserts that regional sources were inappropriately excluded.

Response 4: This comment seems to focus only on the data provided in the modeling protocol and does not consider the information presented in Appendix B of the “PSD Air Quality Analysis Modeling Report”. In short, criteria from U.S. EPA’s Appendix W and Ohio Engineering Guide #69 were followed to determine whether or not a particular facility should be included in the modeling inventory or not. These criteria and rationale are laid out in Appendix B and were reviewed by both Ohio EPA and U.S. EPA. Neither Ohio EPA or U.S. EPA found that any source was excluded inappropriately. While the commenter may have chosen to focus on the data presented in the modeling protocol, it must be noted that a previous iteration of the offsite inventory had been supplied to Ohio EPA in 2016. Therefore, the information presented in the protocol was acceptable to Ohio EPA prior to the submittal of the actual modeling analysis and report.

Lastly, the commenter asserts that “The only valid reason for dropping sources is by providing a demonstration that the source’s impact is already captured by the background monitoring site”. There are multiple valid ways to exclude sources from a modeling inventory. Indeed, Ohio EPA would strongly discourage the regular exclusion of offsite sources based on monitoring data, even if those sources were demonstrably represented by monitoring data. This ensures an additional level of conservatism in the modeled results due to the “double counting” of some impacts.

Comment 5: The commenter asserts that the application of Modeled Emission Rates for Precursors (MERPs) to assess secondary impacts was flawed.

Response 5: Appendix W to 40 CFR Part 51, as revised in 2017, establishes a tiered approach to addressing secondary formation. The first tier necessitates the use of “technically credible relationships between precursor emissions and a source’s impacts”. Tier two would necessitate the use of chemical transport models to address secondary formation. To facilitate application of first tier methodologies, U.S. EPA created draft guidance based on chemical transport modeling of hypothetical sources across the country and established a methodology for applying these modeled results and the emissions of a particular facility to determine if a project’s impacts are significant with respect to secondarily formed PM2.5 and ozone.

Ohio EPA believes that U.S. EPA’s modeling fulfills the definition of established “technically credible relationships” between precursor emissions and secondary impacts. For this project (and several others), U.S. EPA’s hypothetical sources located in Tuscarawas County, OH are considered representative of the long-range impacts of secondarily formed ozone and PM2.5. U.S. EPA provided no adverse comment to this methodology during their lengthy and thorough review of the modeling assessment. Indeed, hypothetical sources from U.S. EPA’s MERPs modeling have been used to assess secondary formation of ozone and PM2.5 for at least two additional PSD projects in Ohio. That the Tuscarawas sources are not located in the complex terrain of the Ohio River Valley is largely irrelevant, as the localized effects of terrain are unlikely to impact the formation of ozone and PM2.5, which are known to occur over long distances.

The commenter asserts that the use of the tall stack source in U.S. EPA’s modeling is inappropriate for the assessment of secondarily formed ozone. To alleviate those concerns, the demonstration can be performed using U.S. EPA’s results for the low-stack sources in Tuscarawas County, as follows:

$$\text{NOx MERP} = 1.0 \text{ ppb} \times (500 \text{ TPY} / 1.36 \text{ ppb}) = 368 \text{ TPY}$$



Response to Comments
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004

$$\text{VOC MERP} = 1.0 \text{ ppb} \times (500 \text{ TPY}/0.18 \text{ ppb}) = 2,777 \text{ TPY}$$

$$(164 \text{ TPY} / 368 \text{ TPY}) + (396 \text{ TPY} / 2777 \text{ TPY}) \times 100\% = 59\%$$

The results above indicate a change of approximately 1 percent from the original MERPs analysis submitted by the facility. This again demonstrates that the project does not exceed the critical air quality threshold (SIL) for ozone.

On page 18 of the submitted comments, the commenter states:

"The only reliable data provided in the Modeling Report on secondary impacts is the ozone exceedance by 131 percent."

The 131 percent value is derived from U.S. EPA's most conservative MERPs values for the Eastern United States, from the very same modeling assessment and guidance for which the proposed project relied on to assess secondary formation. These most conservative MERPs are derived from hypothetical sources in U.S. EPA's modeling. The commenter states in the same paragraph, "there is no basis to consider the hypothetical source model as reliable". It is unclear to Ohio EPA why the initial assessment, based on the same hypothetical modeling assessment and yielding a value of 131 percent of the SIL is considered reliable and should be accepted, yet the more refined assessment based on a source more local to the project and yielding a result of 58 percent of the SIL is unreliable and to be rejected.

The commenter seems to suggest that a site-specific chemical transport modeling analysis is the only appropriate compliance tool available for this project. Ohio EPA disagrees. U.S. EPA has been very clear in its assertion that Tier 2 modeling would be necessary in only the rarest of instances, nor has chemical transport modeling ever been suggested by U.S. EPA as the only appropriate assessment tool. As an example, an updated version of the presentation cited by the commenter on page 17 of their comments was presented at the 2018 Regional, State, and Local Modelers Workshop. On slide No. 2 of that presentation it is stated that the newly-added Section 5 of Appendix W does not establish a requirement for chemical transport modeling.

The "massive size" of the proposed project is cited by the commenter as a reason to require site-specific chemical transport modeling. Although this may be a large project, the emissions are similar to other sources. The proposed facility has a NOx potential to emit of 164 tons per year, and a VOC potential to emit of 396 tons per year. Recently, the most common PSD projects in Ohio have involved large combined cycle natural gas plants, which typically have potential NOx emissions of 250 to 400 tons per year, and potential VOC emissions of 100 to 150 tons per year. Based on U.S. EPA's MERPs modeling, sources located in the Eastern United States emitting 500 tons of NOx are, on average, 30 times more impactful with respect to ozone than those same sources emitting 500 tons of VOC. For the Ohio-specific sources in the MERPs modeling, a 500 TPY NOx emitter is approximately eight times more impactful than a 500 ton per year VOC source. This suggests the proposed project will be less impactful to ozone concentrations than the majority of the combined cycle natural gas plants recently permitted in Ohio with well-designed controls and Best Available Control Technology.

Comment 6: Commenter request clarification on if the modeling included receptors in the Ohio River.

Response 6: Yes, receptors were placed in the Ohio River. As the first step in a PSD modeling analysis, modeling is conducted against the significant impact level (SIL) of each significantly emitted criteria pollutant and relevant averaging period. The image below depicts the portion of the receptor grid near to the facility utilized in the SIL analyses.



As shown in the image above, there are receptors in the Ohio River. It should be noted that, for both the NAAQS and PSD Increment analyses, the receptors are limited to only those receptors where the project is significant. In those analyses, it is possible that there are no significant receptors in the Ohio River.

Comment 7: The commenter remarks that improper meteorological data was used in the analysis.

Response 7: On August 29, 2016, a conference call was held between Ohio EPA and U.S. EPA Region 5 to determine the suitability of the Cardinal meteorological data to this project. Prior to this call, Ohio EPA had supplied data to U.S. EPA indicating similarities in land use, wind direction and other factors that demonstrated that the Cardinal meteorological data was representative of the project site. The result of that conference call was concurrence from U.S. EPA Region 5 that this meteorological data was appropriate to be used in the modeling analysis.

Comment 8: Incorrect emissions inputs used in the modeling analysis.

Response 8: The commenter is referred to the responses provided to U.S. EPA Region 5 based on their review of the modeling evaluation, as well as to Responses V.C. and VI.A-H. addressing PTE calculations.

End of Response to Comments



FINAL

**Division of Air Pollution Control
Permit-to-Install
for
PTTGCA Petrochemical Complex**

Facility ID: 0607135004
Permit Number: P0124972
Permit Type: Initial Installation
Issued: 12/21/2018
Effective: 12/21/2018



**Division of Air Pollution Control
Permit-to-Install
for
PTTGCA Petrochemical Complex**

Table of Contents

Authorization	1
A. Standard Terms and Conditions	6
1. Federally Enforceable Standard Terms and Conditions	7
2. Severability Clause	7
3. General Requirements	7
4. Monitoring and Related Record Keeping and Reporting Requirements.....	8
5. Scheduled Maintenance/Malfunction Reporting	9
6. Compliance Requirements.....	9
7. Best Available Technology.....	10
8. Air Pollution Nuisance	10
9. Reporting Requirements	11
10. Applicability.....	11
11. Construction of New Sources(s) and Authorization to Install	11
12. Permit-To-Operate Application.....	12
13. Construction Compliance Certification	12
14. Public Disclosure	13
15. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations	13
16. Fees.....	13
17. Permit Transfers	13
18. Risk Management Plans	13
19. Title IV Provisions	13
B. Facility-Wide Terms and Conditions.....	14
C. Emissions Unit Terms and Conditions	19
1. Emissions Unit Group - Ethane Cracking Furnaces: B001 - B006	20
2. Emissions Unit Group - Natural Gas and Ethane-Fired Steam Boilers: B007 - B009.....	43
3. P801, Ethylene Manufacturing Unit.....	60
4. P802, High-Density Polyethylene Manufacturing Unit #1	69
5. P803, High-Density Polyethylene Manufacturing Unit #2	86
6. P804, Linear Low/High-Density Polyethylene Manufacturing Unit #3	101
7. P805, Linear Low/High-Density Polyethylene Manufacturing Unit #4	113



Ohio Environmental
Protection Agency

8. Emissions Unit Group – OSBL Thermal Oxidizers: P001 and P002	124
9. P003, High Pressure Ground Flare (B-5001)	135
10. P004, Low Pressure Ground Flare (B-5002)	143
11. P806, Wastewater Collection and Treatment	151
12. P807, Fugitive Emissions	166
13. J001, Light and Heavy Pygas Railcar Loading	190
14. P901, HDPE Railcar Loading 1	193
15. P902, HDPE Railcar Loading 2	199
16. F001, Facility Roadways	205
17. Emissions Unit Group - Firewater Pumps: P005 and P006	210
18. P007, Emergency Diesel-fired Generator Engine (5GE-6401A)	217
19. Emissions Unit Group - 1,000 kW Emergency Generators: P008 - P010	225
20. P011, Cooling Tower (5E-5201).....	233



Final Permit-to-Install
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004
Effective Date: 12/21/2018

Authorization

Facility ID: 0607135004
Facility Description: Petrochemical Complex
Application Number(s): A0061393, A0061757, A0062022
Permit Number: P0124972
Permit Description: Initial installation permit for a world-scale petrochemical complex composed of ethylene and ethylene-based derivative plants to manufacture high-density polyethylene (HDPE) and linear low-density polyethylene/HDPE (LLDPE/HDPE) with the following design capacities: Ethylene Plant: 1,500 KT/year; HDPE Units: two (2) trains of 350 KT/year for each train; and LLDPE/HDPE Units: two (2) trains of 450 KT/year for each train. The petrochemical complex will also involve onsite railcar and truck loading, supporting utilities, infrastructure, storage tanks, logistics facilities, and facilities to produce and/or provide required natural gas, water, air, nitrogen, steam, and electricity to support the operation of process units.
Permit Type: Initial Installation
Permit Fee: \$91,489.85
Issue Date: 12/21/2018
Effective Date: 12/21/2018

This document constitutes issuance to:

PTTGCA Petrochemical Complex
57246 Ferry Landing Rd
Shadyside, OH 43947

of a Permit-to-Install for the emissions unit(s) identified on the following page.

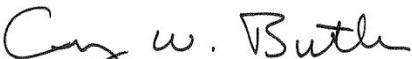
Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Ohio EPA DAPC, Southeast District Office
2195 Front St.
Logan, OH 43138
(740)385-8501

The above named entity is hereby granted a Permit-to-Install for the emissions unit(s) listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency


Craig W. Butler
Director

Authorization (continued)

Permit Number: P0124972

Permit Description: Initial installation permit for a world-scale petrochemical complex composed of ethylene and ethylene-based derivative plants to manufacture high-density polyethylene (HDPE) and linear low-density polyethylene/HDPE (LLDPE/HDPE) with the following design capacities: Ethylene Plant: 1,500 KT/year; HDPE Units: two (2) trains of 350 KT/year for each train; and LLDPE/HDPE Units: two (2) trains of 450 KT/year for each train. The petrochemical complex will also involve onsite railcar and truck loading, supporting utilities, infrastructure, storage tanks, logistics facilities, and facilities to produce and/or provide required natural gas, water, air, nitrogen, steam, and electricity to support the operation of process units.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Emissions Unit ID:	F001
Company Equipment ID:	Facility Roadways
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	J001
Company Equipment ID:	Light and Heavy Pygas Rail Loading
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P003
Company Equipment ID:	High Pressure Ground Flare
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P004
Company Equipment ID:	Low Pressure Ground Flare
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P007
Company Equipment ID:	OSBL Emergency Generator
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P011
Company Equipment ID:	Cooling Tower
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P801
Company Equipment ID:	Ethylene Manufacturing Unit
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P802
Company Equipment ID:	HDPE Unit 1
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable



Final Permit-to-Install
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004
Effective Date: 12/21/2018

Emissions Unit ID:	P803
Company Equipment ID:	HDPE Unit 2
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P804
Company Equipment ID:	LLDPE/HDPE Unit 3
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P805
Company Equipment ID:	LLDPE/HDPE Unit 4
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P806
Company Equipment ID:	Wastewater Collection and Treatment
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P807
Company Equipment ID:	Fugitive Emissions
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable

Group Name: 1,000 kW Emergency Generators

Emissions Unit ID:	P008
Company Equipment ID:	ECU Emergency Generator
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P009
Company Equipment ID:	PE 1&2 Emergency Generator
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P010
Company Equipment ID:	PE 3&4 Emergency Generator
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable

Group Name: Ethane Cracking Furnaces

Emissions Unit ID:	B001
Company Equipment ID:	Ethane Cracking Furnace 1
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B002
Company Equipment ID:	Ethane Cracking Furnace 2
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B003
Company Equipment ID:	Ethane Cracking Furnace 3
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B004
Company Equipment ID:	Ethane Cracking Furnace 4
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable



Final Permit-to-Install
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004
Effective Date: 12/21/2018

Emissions Unit ID:	B005
Company Equipment ID:	Ethane Cracking Furnace 5
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B006
Company Equipment ID:	Ethane Cracking Furnace 6
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable

Group Name: Firewater Pumps

Emissions Unit ID:	P005
Company Equipment ID:	Firewater Pump 1
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P006
Company Equipment ID:	Firewater Pump 2
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable

Group Name: HDPE Railcar Loading

Emissions Unit ID:	P901
Company Equipment ID:	HDPE Railcar Loading 1
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P902
Company Equipment ID:	HDPE Railcar Loading 2
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable

Group Name: OSBL Thermal Oxidizers

Emissions Unit ID:	P001
Company Equipment ID:	OSBL Thermal Oxidizer 1
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P002
Company Equipment ID:	OSBL Thermal Oxidizer 2
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable

Group Name: Steam Boilers

Emissions Unit ID:	B007
Company Equipment ID:	Steam Boiler 1
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	B008
Company Equipment ID:	Steam Boiler 2
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable



Final Permit-to-Install
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004
Effective Date: 12/21/2018

Emissions Unit ID:	B009
Company Equipment ID:	Steam Boiler 3
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable



Final Permit-to-Install
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004
Effective Date: 12/21/2018

A. Standard Terms and Conditions

1. Federally Enforceable Standard Terms and Conditions

- a) All Standard Terms and Conditions are federally enforceable, with the exception of those listed below which are enforceable under State law only:
- (1) Standard Term and Condition A.2.a), Severability Clause
 - (2) Standard Term and Condition A.3.c) through A. 3.e) General Requirements
 - (3) Standard Term and Condition A.6.c) and A. 6.d), Compliance Requirements
 - (4) Standard Term and Condition A.9., Reporting Requirements
 - (5) Standard Term and Condition A.10., Applicability
 - (6) Standard Term and Condition A.11.b) through A.11.e), Construction of New Source(s) and Authorization to Install
 - (7) Standard Term and Condition A.14., Public Disclosure
 - (8) Standard Term and Condition A.15., Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations
 - (9) Standard Term and Condition A.16., Fees
 - (10) Standard Term and Condition A.17., Permit Transfers

2. Severability Clause

- a) A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.
- b) All terms and conditions designated in parts B and C of this permit are federally enforceable as a practical matter, if they are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA and the State and by citizens (to the extent allowed by section 304 of the Act) under the Act. Terms and conditions in parts B and C of this permit shall not be federally enforceable and shall be enforceable under State law only, only if specifically identified in this permit as such.

3. General Requirements

- a) Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and re-issuance, or modification.
- b) It shall not be a defense for the permittee in an enforcement action that it would have been

necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.

- c) This permit may be modified, revoked, or revoked and reissued, for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.
- d) This permit does not convey any property rights of any sort, or any exclusive privilege.
- e) The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

4. Monitoring and Related Record Keeping and Reporting Requirements

- a) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:
 - (1) The date, place (as defined in the permit), and time of sampling or measurements.
 - (2) The date(s) analyses were performed.
 - (3) The company or entity that performed the analyses.
 - (4) The analytical techniques or methods used.
 - (5) The results of such analyses.
 - (6) The operating conditions existing at the time of sampling or measurement.
- b) Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.
- c) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall submit required reports in the following manner:
 - (1) Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the Ohio EPA DAPC, Southeast District Office.
 - (2) Quarterly written reports of (i) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations,

excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the Ohio EPA DAPC, Southeast District Office. The written reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See A.15. below if no deviations occurred during the quarter.

- (3) Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, and reporting requirements contained in this permit shall be submitted to the Ohio EPA DAPC, Southeast District Office every six months, by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.
- (4) This permit is for an emissions unit located at a Title V facility. Each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.
- d) The permittee shall report actual emissions pursuant to OAC Chapter 3745-78 for the purpose of collecting Air Pollution Control Fees.

5. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to the Ohio EPA DAPC, Southeast District Office in accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06.

Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

6. Compliance Requirements

- a) All applications, notifications or reports required by terms and conditions in this permit to be submitted or "reported in writing" are to be submitted to Ohio EPA through the Ohio EPA's eBusiness Center: Air Services web service ("Air Services"). Ohio EPA will accept hard copy submittals on an as-needed basis if the permittee cannot submit the required documents through the Ohio EPA eBusiness Center. In the event of an alternative hard copy submission in lieu of the eBusiness Center, the post-marked date or the date the document is delivered in person will be recognized as the date submitted. Electronic submission of applications, notifications or reports required to be submitted to Ohio EPA fulfills the requirement to submit the required information to the Director, the appropriate Ohio EPA District Office or contracted local air agency, and/or any other individual or organization specifically identified as an additional recipient identified in this permit unless otherwise specified. Consistent with OAC rule

3745-15-03, the electronic signature date shall constitute the date that the required application, notification or report is considered to be "submitted". Any document requiring signature may be represented by entry of the personal identification number (PIN) by responsible official as part of the electronic submission process or by the scanned attestation document signed by the Authorized Representative that is attached to the electronically submitted written report.

Any document (including reports) required to be submitted and required by a federally applicable requirement in this permit shall include a certification by a Responsible Official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.

- b) Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:
 - (1) At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.
 - (2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with ORC section 3704.08.
 - (3) Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.
 - (4) As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.
- c) The permittee shall submit progress reports to the Ohio EPA DAPC, Southeast District Office concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:
 - (1) Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.
 - (2) An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

7. Best Available Technology

As specified in OAC Rule 3745-31-05, new sources that must employ Best Available Technology (BAT) shall comply with the Applicable Emission Limitations/Control Measures identified as BAT for each subject emissions unit.

8. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

9. Reporting Requirements

The permittee shall submit required reports in the following manner:

- a) Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the Ohio EPA DAPC, Southeast District Office.
- b) Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the Ohio EPA DAPC, Southeast District Office. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

10. Applicability

This Permit-to-Install is applicable only to the emissions unit(s) identified in the Permit-to-Install. Separate application must be made to the Director for the installation or modification of any other emissions unit(s) not exempt from the requirement to obtain a Permit-to-Install.

11. Construction of New Sources(s) and Authorization to Install

- a) This permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. This permit does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the application and terms and conditions of this permit. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of this permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Issuance of this permit is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.
- b) If applicable, authorization to install any new emissions unit included in this permit shall terminate within eighteen months of the effective date of the permit if the owner or operator has not undertaken a continuing program of installation or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the permittee shows good cause for any such extension.
- c) The permittee may notify Ohio EPA of any emissions unit that is permanently shut down (i.e., the emissions unit has been physically removed from service or has been altered in such a way

that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31) by submitting a certification from the authorized official that identifies the date on which the emissions unit was permanently shut down. Authorization to operate the affected emissions unit shall cease upon the date certified by the authorized official that the emissions unit was permanently shut down. At a minimum, notification of permanent shut down shall be made or confirmed by marking the affected emissions unit(s) as "permanently shut down" in "Air Services" along with the date the emissions unit(s) was permanently removed and/or disabled. Submitting the facility profile update electronically will constitute notifying the Director of the permanent shutdown of the affected emissions unit(s).

- d) The provisions of this permit shall cease to be enforceable for each affected emissions unit after the date on which an emissions unit is permanently shut down (i.e., emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31). All records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, must be maintained in accordance with law. All reports required by this permit must be submitted for any period an affected emissions unit operated prior to permanent shut down. At a minimum, the permit requirements must be evaluated as part of the reporting requirements identified in this permit covering the last period the emissions unit operated.

Unless otherwise exempted, no emissions unit certified by the responsible official as being permanently shut down may resume operation without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31 and OAC Chapter 3745-77 if the restarted operation is subject to one or more applicable requirements.

- e) The permittee shall comply with any residual requirements related to this permit, such as the requirement to submit a deviation report, air fee emission report, or other any reporting required by this permit for the period the operating provisions of this permit were enforceable, or as required by regulation or law. All reports shall be submitted in a form and manner prescribed by the Director. All records relating to this permit must be maintained in accordance with law.

12. Permit-To-Operate Application

The permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77. The permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if operation of the proposed new or modified source(s) as authorized by this permit would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d) must be obtained before operating the source in a manner that would violate the existing Title V permit requirements.

13. Construction Compliance Certification

The applicant shall identify the following dates in the "Air Services" facility profile for each new emissions unit identified in this permit.

- a) Completion of initial installation date shall be entered upon completion of construction and prior to start-up.

- b) Commence operation after installation or latest modification date shall be entered within 90 days after commencing operation of the applicable emissions unit.

14. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

15. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

16. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable permit-to-install fees within 30 days after the issuance of any permit-to-install. The permittee shall pay all applicable permit-to-operate fees within thirty days of the issuance of the invoice.

17. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The new owner must update and submit the ownership information via the "Owner/Contact Change" functionality in "Air Services" once the transfer is legally completed. The change must be submitted through "Air Services" within thirty days of the ownership transfer date.

18. Risk Management Plans

If the permittee is required to develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. ("Act"), the permittee shall comply with the requirement to register such a plan.

19. Title IV Provisions

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.



Final Permit-to-Install
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004
Effective Date: 12/21/2018

B. Facility-Wide Terms and Conditions

1. All the following facility-wide terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:
 - a) B.16.
2. The following emissions units are also being installed as part of this project:

EU ID	EU Description (Tank ID)	BACT Requirement	Emission Rates (pounds/year)	Other Applicable Requirements
T002	Ethylene Rundown Storage Tank (T-4802)	Vent to high-pressure flare (EU P003) with a minimum 98.0% destruction efficiency	See EU P003	N/A
T003	Light Pygas Storage Tank 1 (T-4804A)	Vent to thermal oxidizer (EUs P001 or P002) with a minimum 99.5% destruction efficiency	See EUs P001 or P002	NSPS Subpart Kb and 40 CFR Part 63 Subparts SS and YY
T004	Light Pygas Storage Tank 2 (T-4804B)	Vent to thermal oxidizer (EUs P001 or P002) with a minimum 99.5% destruction efficiency	See EUs P001 or P002	NSPS Subpart Kb and 40 CFR Part 63 Subparts SS and YY
T005	Heavy Pygas Storage Tank 1 (T-4805A)	Vent to thermal oxidizer (EU P001) with a minimum 99.5% destruction efficiency	See EUs P001 or P002	NSPS Subpart Kb and 40 CFR Part 63 Subparts SS and YY
T006	Heavy Pygas Storage Tank 2 (T-4805B)	Vent to thermal oxidizer (EU P001) with a minimum 99.5% destruction efficiency	See EUs P001 or P002	NSPS Subpart Kb and 40 CFR Part 63 Subparts SS and YY
T007	Off-Spec Ethylene Storage Bullets (V-4806A and V-4806B)	Vent to high pressure flare (EU P003) with a minimum 98.0% destruction efficiency	See EU P003	N/A

T008	Spent Caustic Storage Tank (T-3501)	Vent to thermal oxidizer (EUs P001 or P002) with a minimum 99.5% destruction efficiency	See EUs P001 and P002	NESHAP Subpart FF and MACT Subpart XX
T009	Spent Caustic Storage Standby Tank (T-3511)	Vent to thermal oxidizer (EUs P001 or P002) with a minimum 99.5% destruction efficiency	See EUs P001 and P002	NSPS Subpart Kb, NESHAP Subpart FF and MACT Subpart XX
T010	1-Butene Storage Bullets (V-4808A and V-4808B)	Vent to thermal oxidizer (EUs P001 or P002) with a minimum 99.5% destruction efficiency	See EUs P001 and P002	N/A
T011	1-Hexene Storage Tank (T-4809)	Vent to thermal oxidizer (EUs P001 or P002) with a minimum 99.5% destruction efficiency	See EUs P001 and P002	NSPS Subpart Kb
T012	i-Butane Storage Bullet (V-4810)	Vent to thermal oxidizer (EUs P001 or P002) with a minimum 99.5% destruction efficiency	See EUs P001 and P002	N/A
T013	Propane Storage Bullet (5T-V-4803A)	Vent to high pressure flare (EU P003) with a minimum 98.0% destruction efficiency	See EU P003	N/A
T014	i-Pentane Storage Bullet (V-4811)	Vent to thermal oxidizer (EUs P001 or P002) with a minimum 99.5% destruction efficiency	See EUs P001 and P002	N/A

3. If applicable, the permittee shall develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq. ("Act") no later than the date on which a regulated substance is first present above a threshold quantity in a process.
4. The following emissions units contained in this permit are subject to 40 CFR Part 63, Subpart YY: B001-B006. The complete MACT requirements, including the MACT General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulations (e-CFR) website <http://www.ecfr.gov> or by contacting the Ohio EPA, Southeast District Office.
5. The following emissions units contained in this permit are subject to 40 CFR Part 60, Subpart Db and 40 CFR Part 63, Subpart DDDDD: B007-B009. The complete NSPS and MACT requirements, including the NSPS and MACT General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulation (e-CFR) website <http://www.ecfr.gov> or by contacting the Ohio EPA, Southeast District Office.
6. Pursuant to OAC rule 3745-14-01(C)(1)(b)(iii), emissions units B007-B009 are subject to the NOx Budget Trading Program (OAC Chapter 3745-14). OAC Chapter 3745-14 is currently under revision. The permittee must comply with any applicable requirements that become effective during the permit term and replace the existing NOx budget trading program applicable requirements.
7. The following emissions unit contained in this permit is subject to 40 CFR Part 60, Subparts Kb, VVa, NNN and RRR, 40 CFR Part 61, Subparts J and V, and 40 CFR Part 63, Subparts SS, UU, XX and YY: P801. The complete NSPS, NESHAP and MACT requirements, including the NSPS, NESHAP and MACT General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulation (e-CFR) website <http://www.ecfr.gov> or by contacting the Ohio EPA, Southeast District Office.
8. The following emissions units contained in this permit are subject to 40 CFR Part 60, Subpart DDD and 40 CFR Part 63, Subparts SS and FFFF and DDDDD: P802, P803, P804, and P805. The complete NSPS and MACT requirements, including the NSPS and MACT General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulation (e-CFR) website <http://www.ecfr.gov> or by contacting the Ohio EPA, Southeast District Office.
9. The following emissions units contained in this permit are subject to 40 CFR Part 60, Subparts Kb, DDD, NNN and RRR, 40 CFR Part 61, Subpart FF and 40 CFR Part 63, Subparts G, FFF, SS and YY: P001 and P002. The complete NSPS, NESHAP and MACT requirements, including the NSPS, NESHAP and MACT General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulation (e-CFR) website <http://www.ecfr.gov> or by contacting the Ohio EPA, Southeast District Office.
10. The following emissions unit contained in this permit is subject to 40 CFR Part 60, Subparts NNN and RRR and 40 CFR Part 63, Subparts SS and YY: P003 and P004. The complete NSPS and MACT requirements, including the NSPS and MACT General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulation (e-CFR) website <http://www.ecfr.gov> or by contacting the Ohio EPA, Southeast District Office.
11. The following emissions unit contained in this permit is subject to 40 CFR Part 61, Subpart FF and 40 CFR Part 63, Subparts XX, YY and FFFF: P806. The complete NESHAP and MACT requirements,

including the NESHPAP and MACT General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulation (e-CFR) website <http://www.ecfr.gov> or by contacting the Ohio EPA, Southeast District Office.

12. The following emissions unit contained in this permit is subject to 40 CFR Part 60, Subpart VVa, 40 CFR Part 61, Subpart J and V and 40 CFR Part 63, Subparts F, H, SS and UU: P807. The complete NSPS, NESHPAP and MACT requirements, including the NSPS, NESHPAP and MACT General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulation (e-CFR) website <http://www.ecfr.gov> or by contacting the Ohio EPA, Southeast District Office.
13. The following emissions units contained in this permit are subject to 40 CFR Part 60, Subpart VVa: J001. The complete NSPS requirements, including the NSPS General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulation (e-CFR) website <http://www.ecfr.gov> or by contacting the Ohio EPA, Southeast District Office.
14. The following emissions units contained in this permit are subject to 40 CFR Part 60, Subpart IIII and 40 CFR Part 63, Subpart ZZZZ: P005-P010. The complete NSPS and MACT requirements, including the NSPS and MACT General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulation (e-CFR) website <http://www.ecfr.gov> or by contacting the Ohio EPA, Southeast District Office.
15. The following emissions unit contained in this permit is subject to 40 CFR Part 63, Subparts F, XX and YY: P011. The complete MACT requirements, including the MACT General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulations (e-CFR) website <http://www.ecfr.gov> or by contacting the Ohio EPA, Southeast District Office.
16. Except for ammonia emitted from the selective catalytic reduction (SCR) units controlling NO_x emissions from emissions units B001-B006 (see Section C.1.), modeling for toxic air contaminants was not required for this project pursuant to Engineering Guide #70, Question 3 because HAP emissions are subject to 40 CFR Part 63 as identified above or because the maximum annual emissions for each toxic air contaminant, as defined in OAC rule 3745-114-01, will be less than 1.0 ton per year for the project. OAC Chapter 3745-31 requires permittees to apply for and obtain a new or modified permit-to-install prior to making a "modification" as defined by OAC rule 3745-31-01. The permittee is hereby advised that changes in the composition of the materials, or use of new materials, that would cause the emissions of any inorganic toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new permit-to-install.



Final Permit-to-Install
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004
Effective Date: 12/21/2018

C. Emissions Unit Terms and Conditions

1. Emissions Unit Group - Ethane Cracking Furnaces: B001 - B006

EU ID	Operations, Property and/or Equipment Description
B001	Ethane Cracking Furnace 1 (B-10101); 552 MMBtu/hour cracking furnace burning tail gas, natural gas and ethane (backup only) equipped with low-NO _x burners (LNBs) and controlled by selective catalytic reduction (SCR)
B002	Ethane Cracking Furnace 2 (B-10201); 552 MMBtu/hour tail gas and natural gas-fired cracking furnace equipped with LNBs and controlled by SCR
B003	Ethane Cracking Furnace 3 (B-10301); 552 MMBtu/hour tail gas and natural gas-fired cracking furnace equipped with LMBs and controlled by SCR
B004	Ethane Cracking Furnace 4 (B-10401); 552 MMBtu/hour tail gas and natural gas-fired cracking furnace equipped with LNBs and controlled by SCR
B005	Ethane Cracking Furnace 5 (B-10501); 552 MMBtu/hour tail gas and natural gas-fired cracking furnace equipped with LMBs and controlled by SCR
B006	Ethane Cracking Furnace 6 (B-10601); 552 MMBtu/hour tail gas and natural gas-fired cracking furnace equipped with LNBs and controlled by SCR

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:

- (1) b)(1)d., b)(1)j., b)(2)h., d)(10)-(13) and e)(4)

b) Applicable Emissions Limitations and/or Control Requirements

- (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	<p>Nitrogen oxides (NO_x) emissions shall not exceed 0.010 lb/MMBtu as a rolling, 12-month average, excluding periods of startup, shutdown and hot steam standby.</p> <p>NO_x emissions shall not exceed 0.0135 lb/MMBtu as an hourly maximum during normal operation and 7.45 lbs/hr, excluding periods of startup, shutdown and hot steam standby.</p> <p>NO_x emissions shall not exceed 0.015 lb/MMBtu as a 3-hour average and 2.18 lbs/hr during decoking.</p> <p>NO_x emissions shall not exceed 0.050 lb/MMBtu as a three-hour average and</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>7.20 lbs/hr during periods of startup, shutdown and hot steam standby.</p> <p>Carbon monoxide (CO) emissions shall not exceed 0.035 lb/MMBtu as a 12-month rolling average and 19.32 lbs/hr.</p> <p>CO emissions shall not exceed 5.08 lbs/hr during decoking.</p> <p>Volatile organic compound (VOC) emissions shall not exceed 0.008 lb/MMBtu and 4.42 lbs/hr.</p> <p>Particulate emissions (PE) shall not exceed 0.005 lb/MMBtu and 2.76 lbs/hr, excluding periods of decoking.</p> <p>PE shall not exceed 0.019 lb/MMBtu and 2.76 lbs/hr during decoking.</p> <p>Emissions of particulate matter less than 10 microns (PM_{10}) and particulate matter less than 2.5 microns ($PM_{2.5}$) shall not exceed 0.005 lb/MMBtu and 2.76 lbs/hr, excluding periods of decoking.</p> <p>PM_{10} and $PM_{2.5}$ emissions shall not exceed 0.010 lb/MMBtu and 1.45 lbs/hr during decoking.</p> <p>Emissions from emissions units B001-B006, combined, shall not exceed:</p> <ul style="list-style-type: none"> 144.00 tons of NO_x per rolling, 12-month period. 500.00 tons of CO per rolling, 12-month period. 122.00 tons of VOC per rolling, 12-month period. 72.59 tons of PE per rolling, 12-month period. 71.89 tons of PM_{10} and $PM_{2.5}$ per rolling,

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>12-month period.</p> <p>1,673,240 tons of carbon dioxide equivalents (CO₂e) per rolling, 12-month period.</p> <p>The requirements of this rule include compliance with OAC rule 3745-17-07(A).</p> <p>See b)(2)a.-f. below.</p>
b.	ORC 3704.03(T) and OAC rule 3745-31-05(A)(3)	<p>The requirements of this rule are equivalent to the requirements of OAC rules 3745-31-10 through 3745-31-20 for NO_x, CO, VOC, PE, PM₁₀ and PM_{2.5}.</p> <p>Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO₂e emissions from this air contaminant source pursuant to OAC rule 3745-31-34(E)(8).</p>
c.	OAC rule 3745-31-05(A)(3), as effective 6/30/08	See b)(2)g. and c)(3) below.
d.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 6/30/08	<p>BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the SO₂ emissions from this air contaminant source since the potential to emit is less than 10 tons/year.</p> <p>See b)(2)h. below.</p>
e.	OAC rule 3745-17-10(B)(1)	The emissions limitation required by this rule for operations excluding decoking is less stringent than the emissions limitation for PE required for operations excluding decoking pursuant to OAC rules 3745-31-10 through 3745-31-20.
f.	OAC rule 3745-17-11(B)	The emissions limitation required by this rule for decoking operations is less stringent than the emissions limitation for PE required for decoking operations pursuant to OAC rules 3745-31-10 through 3745-31-20.
g.	OAC rule 3745-17-07(A)	Visible PE from any stack shall not exceed 20 percent opacity, except as provided by the rule.
h.	OAC rule 3745-18-06	See b)(2)i. below.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
i.	<p>40 CFR Part 63, Subpart YY (40 CFR 63.1100-1114)</p> <p>[In accordance with Table 1 to 40 CFR 63.1100(a) and 63.1103(e)(1)(i)(G), this emissions unit is a new ethylene cracking furnace and associated decoking operations located at a major source of HAP emissions subject to the emissions limitations/control measures specified in this section.]</p>	<p>An ethylene cracking furnace covered by 40 CFR Part 63, Subpart YY, is not subject to 40 CFR Part 63, Subpart DDDDD. [40 CFR 63.7491(f)]</p> <p>Air emissions from all ethylene cracking furnaces, including emissions during decoking operations, are not subject to the requirements of 40 CFR 63.1103(e)(3). [40 CFR 63.1103(e)(1)(ii)(J)]</p>
j.	ORC 3704.03(F) and OAC rule 3745-114-01	Toxic Air Contaminants

(2) Additional Terms and Conditions

- a. Operating modes of the ethane cracking furnaces are defined as follows:

Operating Mode	Definition
Startup	The period beginning when fuel is introduced to the furnace and ending when the SCR catalyst bed reaches its stable operating temperature. A planned startup for each furnace is limited to 24 hours at 25% or less of the maximum allowable firing rate.
Normal	During normal operations, six furnaces will operate in parallel for ethylene production and will use tail gas as primary (85%) fuel and natural gas as supplement fuel (about 15%). Under normal conditions, about 65% of ethane feed is converted to ethylene and its derivatives.
Decoking	During the cracking process, there is coke formation inside the furnace tubes that requires periodic decoking for efficient cracker operation. Every 45 to 60 days a furnace will go through decoking, which will last for approximately 36 hours. The coke buildup is removed during this mode of operation. The heat input rate required during decoking is about 30% of the furnace's normal heat input. Once a furnace has been decoked, it is placed into hot steam standby (HSSB) or normal operation.
Hot Steam Standby	Once a furnace has been decoked, it is placed into HSSB mode. During this mode, the furnace has steam flowing through it at its minimum firing rate which is only about 20-25% of the furnace's normal heat input. In a typical operating cycle of a cracker, this mode only lasts

	for about 4 hours, before it is ready for normal operations. The furnace discharge in this mode is routed to the firebox for oxygen freeing and then to the quench tower.
Shutdown	The period beginning when the SCR catalyst bed first drops below its stable operating temperature and ending when the fuel is removed from the furnace.
Maintenance	Although decoking is considered periodic maintenance for the cracker, there may be process upsets that can damage the cracker and the cracker will be shut down. During this mode, the furnace will be cold and there will not be any fuel consumption.

- b. As part of the Best Available Control Technology (BACT) determination for NO_x, each cracker furnace must be equipped with low-NO_x burners and must be controlled with SCR with a control efficiency of at least 90%. Compliance with these requirements shall be demonstrated by compliance with the short-term NO_x emissions limitations in b)(1)a.
- c. As part of the BACT determination for CO, compliance with the BACT requirements shall be demonstrated by compliance with the short-term CO emissions limitations in b)(1)a.
- d. As part of the BACT determination for VOC, compliance with the BACT requirements shall be demonstrated by compliance with the short-term VOC emissions limitations in b)(1)a.
- e. As part of the BACT determination for PE, PM₁₀ and PM_{2.5}, compliance with the BACT requirements shall be demonstrated by compliance with the short-term PE, PM₁₀ and PM_{2.5} emissions limitations in b)(1)a. and the operational restriction in c)(1) below.
- f. As part of the BACT determination for CO₂e, compliance with the BACT requirements shall be demonstrated by compliance with the CO₂e emissions limitation in b)(1)a. and the operational restriction in c)(2) below.
- g. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- h. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- i. This emissions unit is not eligible for the exemption from the requirements in OAC rule 3745-18-06 pursuant to OAC rule 3745-18-06(A) because tail gas is burned in this emissions unit in addition to natural gas. However, this emissions unit is not subject to an SO₂ emissions limitation from OAC rule 3745-18-06(E) pursuant to OAC rule 3745-18-01(B)(14) that excludes gaseous fuels from the definition of "process weight".

- j. Continuous emission monitoring systems consist of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.
- k. Each continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2, 3 and 6. At least 45 days before commencing certification testing of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of NO_x and CO₂ or O₂ emissions from the continuous monitor(s), in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.

- l. Each continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 3, 4 or 4a and 6. At least 45 days before commencing certification testing of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of CO and CO₂ or O₂ emissions from the continuous monitor(s), in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) must be kept on site and available for inspection during regular office hours.
- m. The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.

c) Operational Restrictions

- (1) The exhaust gas generated from this emissions unit while operating in decoking mode shall be directed back into the furnace firebox to ensure complete combustion.
- (2) During normal operation mode the exhaust gas temperature from the emissions unit stack shall not exceed 350°F based on a monthly, 12-month rolling average.

- (3) The permittee shall burn only gaseous fuels (i.e., natural gas, tail gas and ethane) in this emissions unit. The sulfur content of gaseous fuels combusted shall not exceed 0.005 gr/dscf.
- d) Monitoring and/or Recordkeeping Requirements
- (1) Prior to the installation of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system), the permittee shall submit information detailing the proposed location of the sampling site in accordance with the siting requirements in 40 CFR Part 60, Appendix B, Performance Specifications 2 and 3. The Ohio EPA, Central Office shall approve the proposed sampling site and certify that the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) meets the requirements of Performance Specifications 2, 3 and 6. Once received, the letter(s)/document(s) of certification shall be maintained on-site and shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.
- (2) The permittee shall install, operate, and maintain equipment to continuously monitor and record NO_x and CO₂ or O₂ emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) including, but not limited to:

- a. emissions of NO_x in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. emissions of NO_x in pounds per month;
- c. the percent CO₂ or O₂ with each cycle time of the analyzer, with no resolution less than one data point per minute required;
- d. results of quarterly cylinder gas audits;
- e. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- f. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- g. hours of operation of the emissions unit, continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system), and control equipment;
- h. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system);

- i. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system); as well as,
- j. the reason (if known) and the corrective actions taken (if any) for each such event in (h) and (i).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (3) Prior to the installation of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system), the permittee shall submit information detailing the proposed location of the sampling site in accordance with the siting requirements in 40 CFR Part 60, Appendix B, Performance Specifications 3 and 4 or 4a (as appropriate). The Ohio EPA, Central Office shall approve the proposed sampling site and certify that the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) meets the requirements of Performance Specifications 2, 4 or 4a and 6. Once received, the letter(s)/document(s) of certification shall be maintained on-site and shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.
- (4) The permittee shall operate and maintain equipment to continuously monitor and record CO and CO₂ or O₂ emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous CO monitoring system including, but not limited to:

- a. emissions of CO in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. emissions of CO in pounds per month;
- c. the percent CO₂ or O₂ with each cycle time of the analyzer, with no resolution less than one data point per minute required;
- d. results of quarterly cylinder gas audits;
- e. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- f. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- g. hours of operation of the emissions unit, continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system), and control equipment;

- h. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system);
- i. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system); as well as,
- j. the reason (if known) and the corrective actions taken (if any) for each such event in (h) and (i).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (5) The permittee shall continuously monitor and record the exhaust gas temperature from the emissions unit stack.
- (6) To ensure proper operation of the SCR, the permittee shall maintain an ammonia slip rate not to exceed 10 ppmv at 3% O₂. The permittee shall monitor for ammonia slip from this emissions unit a minimum of once each day for the first 60 days of operation by calculating ammonia emissions as the difference between the input ammonia, measured by the ammonia injection rate, and the ammonia reacted, measured by the differential NO_x upstream and downstream of the control device that injects urea or ammonia into the exhaust stream. The ammonia emissions must be calculated using the following equation:

$$\text{NH}_3 @ 3\% \text{ O}_2 = [(a/b * 10^6) - c] * d$$

Where:

a = ammonia injection rate, in pounds per hour/17 pound per pound-mol;

b = dry exhaust flow rate (lb/hr)/29 lb/lb-mol;

c = change in measured NO_x concentration across catalyst (ppmv at reference oxygen); and

d = correction factor, the ratio of measured slip to calculated ammonia slip, where the measured slip is obtained from the stack testing for ammonia during the initial demonstration of compliance.

Monitoring for ammonia slip may be reduced to a minimum of once per week if operating procedures have been developed to prevent excess amounts of ammonia from being introduced in the control device and when operation of the control device has been proven successful at controlling ammonia slip. Daily monitoring must resume when the catalyst is within 30 days of its useful life expectancy.

- (7) The permittee shall maintain monthly records of the following information:

- a. the hours this emissions unit operated in each operating mode;
- b. the amount of gaseous fuel consumed in this emissions unit, in MMscf;
- c. the heat content of the gaseous fuel combusted in this emissions unit, in MMBtu/MMscf;
- d. the sulfur content of the gaseous fuel combusted in this emissions unit, in gr/dscf;
- e. the total NO_x emissions for this emissions unit, in pounds, as recorded in d)(2)b.;
- f. the total NOx emissions, in pounds, including startup/shutdown emissions, for emissions units B001-B006, combined;
- g. the total CO emissions for this emissions unit, in pounds, as recorded in d)(4)b.;
- h. the total CO emissions, in pounds, including startup/shutdown emissions, for emissions units B001-B006, combined;
- i. the total VOC emissions, in pounds, including startup/shutdown emissions, for this emissions unit, calculated by multiplying the VOC emissions factor of 0.008 lb/MMBtu, or the results of the most recent stack test, by the amount of gaseous fuel consumed, including periods of startup/shutdown, as recorded in d)(7)b. and the heat content of the natural gas consumed, as recorded in d)(7)c.;
- j. the total VOC emissions, in pounds, including startup/shutdown emissions, for emissions units B001-B006, combined;
- k. the total PE/PM₁₀/PM_{2.5} emissions, in pounds, including startup/shutdown emissions, for this emissions unit, calculated by multiplying the PE/ PM₁₀/PM_{2.5} emissions factor of 0.005 lb/MMBtu for normal operations and startup and shutdown, 0.019 lb/MMBtu for PE during periods of decoking, and 0.010 lb/MMBtu for PM₁₀/PM_{2.5} emissions during periods of decoking, or the results of the most recent stack test, by the amount of gaseous fuel consumed, including periods of startup/shutdown, as recorded in d)(7)b. and the heat content of the gaseous fuel consumed, as recorded in d)(7)c.;
- l. the total PE/PM₁₀/PM_{2.5} emissions, in pounds, including startup/shutdown emissions, for emissions units B001-B006, combined;
- m. the total CO_{2e} emissions, in pounds, including startup/shutdown emissions, for this emissions unit, calculated by multiplying the CO_{2e} emissions factor of 117.00 lbs/MMBtu, by the amount of gaseous fuel consumed, including periods of startup/shutdown, as recorded in d)(7)b. and the heat content of the gaseous fuel consumed, as recorded in d)(7)c.;
- n. the total CO_{2e} emissions, in pounds, including startup/shutdown emissions, for emissions units B001-B006, combined;
- o. the rolling, 12-month summation of the NO_x emissions from emissions units B001-B006, combined, in tons, including start-up/shutdown emissions, calculated

by adding the total NO_x emissions for the present month as recorded in d)(7)f., plus the total NO_x emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds;

- p. The rolling, 12-month summation of the CO emissions from emissions units B001-B006, combined, in tons, including startup/shutdown emissions, calculated by adding the total CO emissions for the present month as recorded in d)(7)h., plus the total CO emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds;
 - q. The rolling, 12-month summation of the VOC emissions from emissions units B001-B006, combined, in tons, including startup/shutdown emissions, calculated by adding the total VOC emissions for the present month as recorded in d)(7)j., plus the total VOC emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds;
 - r. The rolling, 12-month summation of the PE/PM₁₀/PM_{2.5} emissions from emissions units B001-B006, combined, in tons, including startup/shutdown emissions, calculated by adding the total PE/PM₁₀/PM_{2.5} emissions for the present month as recorded in d)(7)l., plus the total PE/PM₁₀/PM_{2.5} emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds; and
 - s. The rolling, 12-month summation of the CO_{2e} emissions from emissions units B001-B006, combined, in tons, including startup/shutdown emissions, calculated by adding the total CO_{2e} emissions for the present month as recorded in d)(7)n., plus the total CO_{2e} emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds.
- (8) The following records must be maintained on site and made available for inspection upon request:
- a. the results of all tests, all operating data collected during the tests and the calculations performed to determine compliance with the emissions standards;
 - b. copies of manufacturer's equipment design specifications necessary to determine compliance with required control efficiencies or outlet emission rates;
 - c. copies of maintenance procedures and schedules for this emissions unit; and
 - d. records of any maintenance conducted on this emissions unit.
- (9) The permittee shall perform a tune-up of this emissions unit once every five (5) years, at a minimum, as follows:
- a. Inspect the burner, as applicable, and clean or replace any components of the burner as necessary. At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment;

- b. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if applicable;
 - c. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly;
 - d. Optimize total emissions of CO consistent with the manufacturer's specification, if available, and with any NO_x requirement to which the emissions unit is subject;
 - e. Record the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made. Concentrations may be taken from the CEM data; and
 - f. Maintain onsite and if requested, submit, a report containing the following information:
 - i. The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the furnace; and
 - ii. A description of any corrective actions taken as part of the tune-up.
- (10) The permit-to-install (PTI) application for emissions units B001-B006 was evaluated based on the actual materials and the design parameters of the emissions unit(s) exhaust system, as specified by the permittee. The "Toxic Air Contaminant Statute", ORC 3704.03(F), was applied to these emissions units for each toxic air contaminant listed in OAC rule 3745-114-01, using data from the permit application; and modeling was performed for each toxic air contaminant emitted at over one ton per year using an air dispersion model such as SCREEN3, AERMOD, or ISCST3, or other Ohio EPA approved model. The predicted 1-hour maximum ground-level concentration results from the approved air dispersion model were compared to the Maximum Acceptable Ground-Level Concentration (MAGLC), calculated as described in the Ohio EPA guidance document entitled "Review of New Sources of Air Toxic Emissions, Option A", as follows:
- a. the exposure limit, expressed as a time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, for each toxic compound(s) emitted from the emissions unit(s), (as determined from the raw materials processed and/or coatings or other materials applied) has been documented from one of the following sources and in the following order of preference (TLV was and shall be used, if the chemical is listed):
 - i. threshold limit value (TLV) from the American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; or
 - ii. STEL (short term exposure limit) or the ceiling value from the American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold

Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; the STEL or ceiling value is multiplied by 0.737 to convert the 15-minute exposure limit to an equivalent 8-hour TLV.

- b. The TLV is divided by ten to adjust the standard from the working population to the general public (TLV/10).
- c. This standard is/was then adjusted to account for the duration of the exposure or the operating hours of the emissions unit(s), i.e., "24" hours per day and "7" days per week, from that of 8 hours per day and 5 days per week. The resulting calculation was (and shall be) used to determine the Maximum Acceptable Ground-Level Concentration (MAGLC):

$$\text{TLV}/10 \times 8/24 \times 5/7 = 4 \text{ TLV/XY} = \text{MAGLC}$$

- d. The following summarizes the results of dispersion modeling for the significant toxic contaminant emitted at 1 or more tons/year:

Toxic Contaminant: ammonia

TLV (mg/m³): 17.413

Maximum Hourly Emission Rate (lbs/hr): 7.30

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 32.32

MAGLC (ug/m³): 414.60

The permittee has demonstrated that emissions of ammonia from emissions units B001-B006, combined, are calculated to be less than eighty percent of the maximum acceptable ground level concentration (MAGLC); any new raw material or processing agent shall not be applied without evaluating each component toxic air contaminant in accordance with the "Toxic Air Contaminant Statute", ORC 3704.03(F).

- (11) Prior to making any physical changes to or changes in the method of operation of the emissions unit(s), that could impact the parameters or values that were used in the predicted 1-hour maximum ground-level concentration, the permittee shall re-model the change(s) to demonstrate that the MAGLC has not been exceeded. Changes that can affect the parameters/values used in determining the 1-hour maximum ground-level concentration include, but are not limited to, the following:
- a. changes in the composition of the materials used or the use of new materials, that would result in the emission of a new toxic air contaminant with a lower Threshold Limit Value (TLV) than the lowest TLV previously modeled;
 - b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any toxic air contaminant listed in OAC rule 3745-114-01, that was modeled from the initial (or last) application; and

- c. physical changes to the emissions unit(s) or its/their exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Toxic Air Contaminant Statute" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01 solely due to a non-restrictive change to a parameter or process operation, where compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), has been documented. If the change(s) meet(s) the definition of a "modification", the permittee shall apply for and obtain a final PTI prior to the change. The Director may consider any significant departure from the operations of the emissions unit, described in the permit application, as a modification that results in greater emissions than the emissions rate modeled to determine the ground level concentration; and he/she may require the permittee to submit a permit application for the increased emissions.

- (12) The permittee shall collect, record, and retain the following information for each toxic evaluation conducted to determine compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F):
 - a. a description of the parameters/values used in each compliance demonstration and the parameters or values changed for any re-evaluation of the toxic(s) modeled (the composition of materials, new toxic contaminants emitted, change in stack/exhaust parameters, etc.);
 - b. the Maximum Acceptable Ground-Level Concentration (MAGLC) for each significant toxic contaminant or worst-case contaminant, calculated in accordance with the "Toxic Air Contaminant Statute", ORC 3704.03(F);
 - c. a copy of the computer model run(s), that established the predicted 1-hour maximum ground-level concentration that demonstrated the emissions unit(s) to be in compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), initially and for each change that requires re-evaluation of the toxic air contaminant emissions; and
 - d. the documentation of the initial evaluation of compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), and documentation of any determination that was conducted to re-evaluate compliance due to a change made to the emissions unit(s) or the materials applied.
 - (13) The permittee shall maintain a record of any change made to a parameter or value used in the dispersion model, used to demonstrate compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), through the predicted 1-hour maximum ground-level concentration. The record shall include the date and reason(s) for the change and if the change would increase the ground-level concentration.
- e) Reporting Requirements
- (1) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

- a. Any record which shows the exhaust gas generated from this emissions unit while operating in decoking mode was not directed back into the furnace firebox to ensure complete combustion;
- b. Any record which shows the exhaust gas temperature from the emissions unit stack exceeded 350°F based on a monthly, 12-month rolling average.
- c. Any record which shows the sulfur content of the natural gas exceeded exceed 0.005 gr/dscf;
- d. Any record which shows the ammonia slip rate exceeded 10 ppmvd at 3% O₂; and
- e. All exceedances of the rolling, 12-month NO_x, CO, VOC, PE/PM₁₀/PM_{2.5} and CO₂e emissions limitations.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(2) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system):

- a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of NO_x emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, OAC Chapters 3745-14 and 3745-23, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).
- b. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR Parts 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of continuous CO₂ or O₂ monitoring system downtime and malfunction while the emissions unit was on line.
- c. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:
 - i. the facility name and address;
 - ii. the manufacturer and model number of the continuous NO_x and CO₂ or O₂ and other associated monitors;

- iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
- iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
- v. the total NO_x emissions for the calendar quarter (tons);
- vi. the total operating time (hours) of the emissions unit;
- vii. the total operating time of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) while the emissions unit was in operation;
- viii. results and date of quarterly cylinder gas audits;
- ix. unless previously submitted, results and date of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
- x. unless previously submitted, the results of any relative accuracy test audit showing the continuous NO_x and CO₂ or O₂ monitor out-of-control and the compliant results following any corrective actions;
- xi. the date, time, and duration of any/each malfunction** of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system), emissions unit, and/or control equipment;
- xii. the date, time, and duration of any downtime** of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) and/or control equipment while the emissions unit was in operation; and
- xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred, or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

- (3) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system):

- a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of CO emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, OAC Chapter 3745-21, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).
- b. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR Parts 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of continuous CO₂ or O₂ monitoring system downtime and malfunction while the emissions unit was on line.
- c. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:
 - i. the facility name and address;
 - ii. the manufacturer and model number of the continuous CO and CO₂ or O₂ and other associated monitors;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
 - iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
 - v. the total CO emissions for the calendar quarter (tons);
 - vi. the total operating time (hours) of the emissions unit;
 - vii. the total operating time of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) while the emissions unit was in operation;
 - viii. results and dates of quarterly cylinder gas audits;
 - ix. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));

- x. unless previously submitted, the results of any relative accuracy test audit showing the continuous CO and CO₂ or O₂ monitor out-of-control and the compliant results following any corrective actions;
- xi. the date, time, and duration of any/each malfunction** of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system), emissions unit, and/or control equipment;
- xii. the date, time, and duration of any downtime** of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) and/or control equipment while the emissions unit was in operation; and
- xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred, or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless of whether there is an exceedance of any applicable limit

- (4) The permittee shall submit annual reports that include any changes to any parameter or value used in the dispersion model used to demonstrate compliance with the "Toxic Air Contaminate Statute", ORC 3704.03(F), through the predicted 1-hour maximum concentration. The report should include:
- a. the original model input;
 - b. the updated model input;
 - c. the reason for the change(s) to the input parameter(s); and
 - d. a summary of the results of the updated modeling, including the input changes; and
 - e. a statement that the model results indicate that the 1-hour maximum ground-level concentration is less than 80% of the MAGLC.

If no changes to the emissions, emissions units, or the exhaust stacks have been made during the reporting period, then the report shall include a statement to that effect. This report shall be postmarked or delivered no later than January 31 following the end of each calendar year.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitations:

NO_x emissions shall not exceed 0.010 lb/MMBtu as a rolling, 12-month average, excluding periods of startup, shutdown and hot steam standby.

NO_x emissions shall not exceed 0.0135 lb/MMBtu as an hourly maximum during normal operation and 7.45 lbs/hr, excluding periods of startup, shutdown and hot steam standby.

NO_x emissions shall not exceed 0.015 lb/MMBtu as a 3-hour average and 2.18 lbs/hr during decoking.

NO_x emissions shall not exceed 0.050 lb/MMBtu as a three-hour average and 7.20 lbs/hr during periods of startup, shutdown and hot steam standby.

Applicable Compliance Method:

Compliance during normal operation shall be demonstrated based upon the data collected by the NO_x CEMS pursuant to the monitoring and recordkeeping requirements specified in d)(2). Compliance during decoking and startup/shutdown shall be demonstrated by the testing required in f)(4).

b. Emissions Limitations:

CO emissions shall not exceed 0.035 lb/MMBtu as a 12-month rolling average and 19.32 lbs/hr.

CO emissions shall not exceed 5.08 lbs/hr during decoking.

Applicable Compliance Method:

Compliance shall be demonstrated based upon the CO CEMS pursuant to the monitoring and recordkeeping requirements specified in d)(4).

c. Emissions Limitations:

VOC emissions shall not exceed 0.008 lb/MMBtu and 4.42 lbs/hr.

Applicable Compliance Method:

Compliance with these emissions limitations shall be demonstrated by the testing required in f)(4).

d. Emissions Limitations:

PE shall not exceed 0.005 lb/MMBtu and 2.76 lbs/hr, excluding periods of decoking.

PE shall not exceed 0.019 lb/MMBtu and 2.76 lbs/hr during decoking.

PM₁₀ and PM_{2.5} emissions shall not exceed 0.005 lb/MMBtu and 2.76 lbs/hr, excluding periods of decoking.

PM₁₀ and PM_{2.5} emissions shall not exceed 0.010 lb/MMBtu and 1.45 lbs/hr during decoking.

Applicable Compliance Method:

Compliance with these emissions limitations shall be demonstrated by the testing required in f)(4).

e. Emissions Limitations:

Emissions from emissions units B001-B006, combined, shall not exceed:

144.00 tons of NOx per rolling, 12-month period.

500.00 tons of CO per rolling, 12-month period.

114.00 tons of VOC per rolling, 12-month period.

72.59 tons of PE per rolling, 12-month period.

71.89 tons of PM₁₀ and PM_{2.5} per rolling, 12-month period.

1,673,240 tons of CO_{2e} per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the rolling, 12-month emissions limitations shall be demonstrated by the recordkeeping in d)(7).

f. Emissions Limitation:

Visible PE from any stack shall not exceed 20 percent opacity, except as provided by the rule.

Applicable Compliance Method:

Compliance with this emissions limitation shall be demonstrated by the testing required in f)(4).

- (2) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of the continuous NO_x monitoring system (including the

associated continuous CO₂ or O₂ monitoring system) in units of the applicable standard(s), to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specifications 2, 3 and 6; and ORC section 3704.03(I).

Personnel from the Ohio EPA Central Office and the appropriate Ohio EPA District Office or local air agency shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the appropriate Ohio EPA District Office or local air agency and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) shall be granted upon determination by the Ohio EPA, Central Office that the system meets the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2, 3 and 6; and ORC section 3704.03(I).

Ongoing compliance with the NO_x emissions limitations contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.

Ongoing compliance with the CO₂ or O₂ monitoring requirements contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the monitoring and record keeping section of this permit; and demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.

- (3) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) in units of the applicable standard(s), to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specifications 3 and 4 or 4a (as appropriate) and 6; and ORC section 3704.03(I).

Personnel from the Ohio EPA Central Office and the appropriate Ohio EPA District Office or local air agency shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the appropriate Ohio EPA District Office or local air agency and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) shall be granted upon determination by the Ohio EPA Central Office that the system meets the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 3 and 4 or 4a (as appropriate) and 6 and ORC section 3704.03(I).

Ongoing compliance with the CO emission limitations contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

Ongoing compliance with the CO₂ or O₂ monitoring requirements contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the monitoring and record keeping section of this permit; and demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.

(4) Performance testing shall be conducted as required in OAC rules 3745-31-10 through 20. The permittee shall conduct, or have conducted, emission testing for this emissions unit within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility, as applicable, in accordance with the following requirements:

a. The emission testing shall be conducted to demonstrate compliance with the emissions limitations specified in b)(1) for VOC, PE/PM₁₀/PM_{2.5}, visible PE, and NO_x.

b. The following test method(s) shall be employed to demonstrate compliance with the allowable mass emission rate(s):

for VOC, Methods 1-4 and 18 and 25 of 40 CFR Part 60 Appendix A;

for PE/PM₁₀/PM_{2.5}, Methods 1-5 and 202 of 40 CFR Part 60 Appendix A;

for visible PE, Method 9 of 40 CFR Part 60 Appendix A; and

for NO_x, Methods 1-4 and 7E of 40 CFR Part 60 Appendix A.

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.

c. The test(s) for each pollutant shall be conducted while the emissions unit is operating at or near its maximum capacity, while burning representative fuel and/or combination of fuels, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

d. The testing for VOC, PE/PM₁₀/PM_{2.5} and visible PE shall be conducted when the emissions unit is operating in normal mode. Testing for PE/PM₁₀/PM_{2.5} shall also be conducted when the emissions unit is operating in decoking mode. Testing for NO_x shall only be conducted when the emissions unit is operating in decoking or startup/shutdown modes.

e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods

and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

- f. Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
- g. A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

g) Miscellaneous Requirements

- (1) None.

2. Emissions Unit Group - Natural Gas and Ethane-Fired Steam Boilers: B007 - B009

EU ID	Operations, Property and/or Equipment Description
B007	Steam Boiler 1 (5PK-5801); natural gas and ethane-fired steam boiler equipped with ultra-low-NO _x burners and flue gas recirculation (FGR) with a maximum fuel input rating of 400 million BTU/hour and an average fuel input rating of 160 MMBtu/hour
B008	Steam Boiler 2 (5PK-5802); natural gas and ethane-fired steam boiler equipped with ultra-low-NO _x burners and FGR with a maximum fuel input rating of 400 million BTU/hour and an average fuel input rating of 160 MMBtu/hour
B009	Steam Boiler 3 (5PK-5803); natural gas and ethane-fired steam boiler equipped with ultra-low-NO _x burners and FGR with a maximum fuel input rating of 400 million BTU/hour and an average fuel input rating of 160 MMBtu/hour

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:
 - (1) b)(1)d. and b)(2)g.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	<p>Nitrogen oxides (NO_x) emissions shall not exceed 0.010 lb/MMBtu of actual heat input as a rolling, 30-day average and 4.00 lbs/hr, excluding periods of startup and shutdown.</p> <p>NO_x emissions shall not exceed 0.020 lb/MMBtu of actual heat input and 8.00 lbs/hr during periods of startup and shutdown.</p> <p>Carbon monoxide (CO) emissions shall not exceed 0.035 lb/MMBtu of actual heat input as a rolling, 12-month average and 14.00 lbs/hr.</p> <p>Volatile organic compound (VOC) emissions shall not exceed 0.0054 lb/MMBtu of actual heat input and 2.16 lbs/hr.</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>Particulate emissions (PE) and emissions of particulate matter less than 10 microns (PM_{10}) and particulate matter less than 2.5 microns ($PM_{2.5}$) shall not exceed 0.005 lb/MMBtu of actual heat input and 2.00 lbs/hr.</p> <p>Emissions from emissions units B007-B009, combined, shall not exceed:</p> <ul style="list-style-type: none"> 8.76 tons of NO_x per rolling, 12-month period; 30.70 tons of CO per rolling, 12-month period; 4.73 tons of VOC per rolling, 12-month period; 4.38 tons of PE/PM_{10}/$PM_{2.5}$ per rolling, 12-month period; and 102,500 tons of carbon dioxide equivalents (CO_2e) per rolling, 12-month period. <p>The requirements of this rule include compliance with OAC rule 3745-17-07(A).</p> <p>See b)(2)a.-e. below.</p>
b.	ORC 3704.03(T) and OAC rule 3745-31-05(A)(3)	<p>The requirements of this rule are equivalent to the requirements of OAC rules 3745-31-10 through 3745-31-20 for CO emissions.</p> <p>Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO_2e emissions from this air contaminant source pursuant to OAC rule 3745-31-34(E)(8).</p>
c.	OAC rule 3745-31-05(A)(3), as effective 6/30/08	<p>The requirements of this rule are equivalent to the requirements of OAC rules 3745-31-10 through 3745-31-20 for NO_x, VOC and PE/PM_{10}/$PM_{2.5}$ emissions.</p> <p>See b)(2)f. and c)(1) below.</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
d.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 6/30/08	<p>BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the NO_x, VOC and PE/PM₁₀/PM_{2.5} emissions from this air contaminant source since the calculate annual emissions rate is less than 10 tons/yr taking into account the federally enforceable rule limitations applicable pursuant to OAC rules 3745-31-10 through 3745-31-20.</p> <p>BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the SO₂ emissions from this air contaminant source since the potential to emit is less than 10 tons/year.</p> <p>See b)(2)g. below.</p>
e.	OAC rule 3745-17-10(B)(1)	The emissions limitation required by this rule is less stringent than the emission limitation required pursuant to OAC rules 3745-31-10 through 3745-31-20.
f.	OAC rule 3745-17-07(A)	Visible PE from the stack shall not exceed twenty percent opacity, as a six-minute average, except as provided by the rule.
g.	OAC rule 3745-18-06	Exempt pursuant to OAC rule 3745-18-06(A) since only natural gas fuel is burned in this emissions unit.
h.	OAC rule 3745-110-03(C)	Exempt pursuant to OAC rule 3745-110-03(K)(20) because this emissions unit is subject to BACT requirements for NO _x emissions.
i.	<p>40 CFR Part 60, Subparts A and Db (60.1-19 and 60.40b–60.49b)</p> <p>[In accordance with 40 CFR 60.40b(a), this emissions unit is a steam generating unit commencing construction, modification or reconstruction after July 19, 1984 and that has a heat input capacity of greater than 29 megawatts (MW) (100 million BTU per hour (MMBtu/hr) subject to the emissions limitations and control measures specified in this section.]</p>	<p>The emissions limitations required by this rule are less stringent than the emissions limitations required pursuant to OAC rules 3745-31-10 through 3745-31-20 for NO_x emissions.</p> <p>[40 CFR 60.44b(a)(1)]</p> <p>Emissions units firing only gaseous fuels are exempt from the SO₂ emissions limitation in 60.42b(k)(1).</p> <p>[40 CFR 60.42b(k)(2)]</p> <p>See b)(2)k. below.</p>
j.	40 CFR Part 63, Subpart DDDDD	The permittee shall comply with the work

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	(40 CFR 63.7480-7575) [In accordance with 40 CFR 63.7480, 63.7485, 63.7490(a)(2) and (b) and 63.7499(l), this emissions unit is a new industrial boiler located at a major source of HAP emissions in the units designed to burn gas fuels subject to the emissions limitations and control measures specified in this section.]	practice standards in 40 CFR Part 63, Subpart DDDDD Table 3. [40 CFR 63.7500(a)(1) and (e) and Table 3 (1 or 3)] See c)(4) below. The permittee shall comply with the requirements of 40 CFR Part 63, Subpart DDDDD upon startup. [40 CFR 63.7495(a)]
k.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	Table 10 of 40 CFR Part 63, Subpart DDDDD specifies the provisions of Subpart A that apply to owners and operators of affected facilities subject to this subpart. [40 CFR 63.7565]
I.	OAC rule 37435-31-05(F)	See c)(2) below.

(2) Additional Terms and Conditions

- a. As part of the Best Available Control Technology (BACT) determination for NO_x, each boiler must be equipped with low-NO_x burners (capable of achieving the lowest NO_x emission rate achievable by the technology available at the time of construction) and must utilize FGR. Compliance with these requirements shall be demonstrated by compliance with the short-term NO_x emission limitations in b)(1)a.
- b. As part of the BACT determination for CO, compliance with the BACT requirements shall be demonstrated by compliance with the short-term CO emission limitations in b)(1)a.
- c. As part of the BACT determination for VOC, compliance with the BACT requirements shall be demonstrated by compliance with the short-term VOC emission limitation in b)(1)a.
- d. As part of the BACT determination for PE, PM₁₀ and PM_{2.5}, compliance with the BACT requirements shall be demonstrated by compliance with the short-term PE, PM₁₀ and PM_{2.5} emission limitations in b)(1)a.
- e. As part of the BACT determination for CO₂e, compliance with the BACT requirements shall be demonstrated by compliance with the CO₂e emissions limitation in b)(1)a.
- f. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).

- g. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- h. Continuous emission monitoring systems consist of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.
- i. Each continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2, 3 and 6. At least 45 days before commencing certification testing of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of NO_x and CO₂ or O₂ emissions from the continuous monitor(s), in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.
- j. Each continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) shall be certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 3, 4 or 4a and 6. At least 45 days before commencing certification testing of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system), the permittee shall develop and maintain a written quality assurance/quality control plan designed to ensure continuous valid and representative readings of CO and CO₂ or O₂ emissions from the continuous monitor(s), in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) must be kept on site and available for inspection during regular office hours.

The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.
- k. See 40 CFR Part 60, Subpart Db (40 CFR 60.40b–60.49b).

c) Operational Restrictions

- (1) The permittee shall burn only natural gas or ethane fuel with a maximum sulfur content not to exceed 0.005 gr/dscf in this emissions unit.
- (2) The maximum fuel heat input of emissions units B007-B009 combined shall not exceed 800 MMBtu/hour and 200 MMBtu/hour based up on a rolling, 12-month summation of the heat input values.
- (3) See 40 CFR Part 60, Subpart Db (40 CFR 60.40b–60.49b).
- (4) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480-7575).

d) Monitoring and/or Recordkeeping Requirements

- (1) For each day during which the permittee burns a fuel other than natural gas or ethane fuel with a maximum sulfur content of 0.005 gr/dscf, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.
- (2) Prior to the installation of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system), the permittee shall submit information detailing the proposed location of the sampling site in accordance with the siting requirements in 40 CFR Part 60, Appendix B, Performance Specifications 2 and 3. The Ohio EPA, Central Office shall approve the proposed sampling site and certify that the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) meets the requirements of Performance Specifications 2, 3 and 6. Once received, the letter(s)/document(s) of certification shall be maintained on-site and shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.
- (3) The permittee shall install, operate, and maintain equipment to continuously monitor and record NO_x and CO₂ or O₂ emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) including, but not limited to:

- a. emissions of NO_x in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. emissions of NO_x in pounds per month;
- c. the percent CO₂ or O₂ with each cycle time of the analyzer, with no resolution less than one data point per minute required;
- d. results of quarterly cylinder gas audits;
- e. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;

- f. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- g. hours of operation of the emissions unit, continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system), and control equipment;
- h. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system);
- i. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system); as well as,
- j. the reason (if known) and the corrective actions taken (if any) for each such event in (h) and (i).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (4) Prior to the installation of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system), the permittee shall submit information detailing the proposed location of the sampling site in accordance with the siting requirements in 40 CFR Part 60, Appendix B, Performance Specifications 3 and 4 or 4a (as appropriate). The Ohio EPA, Central Office shall approve the proposed sampling site and certify that the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) meets the requirements of Performance Specifications 2, 4 or 4a and 6. Once received, the letter(s)/document(s) of certification shall be maintained on-site and shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.
- (5) The permittee shall operate and maintain equipment to continuously monitor and record CO and CO₂ or O₂ emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of all data obtained by the continuous CO monitoring system including, but not limited to:

- a. emissions of CO in parts per million for each cycle time of the analyzer, with no resolution less than one data point per minute required;
- b. emissions of CO in pounds per month;
- c. the percent CO₂ or O₂ with each cycle time of the analyzer, with no resolution less than one data point per minute required;

- d. results of quarterly cylinder gas audits;
- e. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
- f. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
- g. hours of operation of the emissions unit, continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system), and control equipment;
- h. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system);
- i. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system); as well as,
- j. the reason (if known) and the corrective actions taken (if any) for each such event in (h) and (i).

All valid data points generated and recorded by the continuous emission monitoring and data acquisition and handling system shall be used in the calculation of the pollutant concentration and/or emission rate over the appropriate averaging period.

- (6) In order to accurately determine the heat input rates for this emissions unit, the permittee shall install, operate, and maintain equipment to continuously monitor and record the actual natural gas fuel flow rate to this emissions unit.
- (7) The permittee shall maintain monthly records of the following information:
 - a. the amount of natural gas and ethane consumed in this emissions unit, in MMscf;
 - b. the heat content of the natural gas and ethane combusted in this emissions unit, in MMBtu/MMscf and MMBtu/hr.
 - c. the maximum hourly fuel heat input to emissions units B007-B009 combined, in MMBtu/hr;
 - d. the rolling, 12-month average hourly fuel heat input to emissions units B007-B009 combined, calculated by adding the total fuel heat input for the present month as recorded in d)(7)b., plus the total fuel heat input for the previous 11 months, and dividing by the hours of operation in the rolling,12-month period;
 - e. the sulfur content of the natural gas and ethane combusted in this emissions unit, in gr/dscf;
 - f. the total NO_x emissions for this emissions unit, in pounds, as recorded in d)(3)b.;

- g. the total NO_x emissions, in pounds, including startup/shutdown emissions, for emissions units B007-B009, combined;
- h. the total CO emissions, in pounds, as recorded in d)(5)b.;
- i. the total CO emissions, in pounds, including startup/shutdown emissions, for emissions units B007-B009, combined;
- j. the total VOC emissions, in pounds, including startup/shutdown emissions, for this emissions unit, calculated by multiplying the VOC emissions factor of 0.0054 lb/MMBtu, or the results of the most recent stack test, by the amount of natural gas and ethane consumed, including periods of startup/shutdown, as recorded in d)(7)a. and the heat content of the natural gas consumed, as recorded in d)(7)b.;
- k. the total VOC emissions, in pounds, including startup/shutdown emissions, for emissions units B007-B009, combined;
- l. the total PE/PM₁₀/PM_{2.5} emissions, in pounds, including startup/shutdown emissions, for this emissions unit, calculated by multiplying the PE/PM₁₀/PM_{2.5} emissions factor of 0.005 lb/MMBtu, or the results of the most recent stack test, by the amount of natural gas and ethane consumed, including periods of startup/shutdown, as recorded in d)(7)a. and the heat content of the natural gas consumed, as recorded in d)(7)b.;
- m. the total PE/PM₁₀/PM_{2.5} emissions, in pounds, including startup/shutdown emissions, for emissions units B007-B009, combined;
- n. the total CO_{2e} emissions, in pounds, including startup/shutdown emissions, for this emissions unit, calculated by multiplying the CO_{2e} emissions factor of 117.00 lbs/MMBtu, by the amount of natural gas and ethane consumed, including periods of startup/shutdown, as recorded in d)(7)a. and the heat content of the natural gas consumed, as recorded in d)(7)b.;
- o. the total CO_{2e} emissions, in pounds, including startup/shutdown emissions, for emissions units B007-B009, combined;
- p. the rolling, 12-month summation of the NO_x emissions from emissions units B007-B009, combined, in tons, including start-up/shutdown emissions, calculated by adding the total NO_x emissions for the present month as recorded in d)(7)g., plus the total NO_x emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds;
- q. The rolling, 12-month summation of the CO emissions from emissions units B007-B009, combined, in tons, including startup/shutdown emissions, calculated by adding the total CO emissions for the present month as recorded in d)(7)i., plus the total CO emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds;
- r. The rolling, 12-month summation of the VOC emissions from emissions units B007-B009, combined, in tons, including startup/shutdown emissions, calculated

by adding the total VOC emissions for the present month as recorded in d)(7)k., plus the total VOC emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds;

- s. The rolling, 12-month summation of the PE/PM₁₀/PM_{2.5} emissions from emissions units B007-B009, combined, in tons, including startup/shutdown emissions, calculated by adding the total PE/PM₁₀/PM_{2.5} emissions for the present month as recorded in d)(7)m., plus the total PE/PM₁₀/PM_{2.5} emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds; and
 - t. The rolling, 12-month summation of the CO_{2e} emissions from emissions units B007-B009, combined, in tons, including startup/shutdown emissions, calculated by adding the total CO_{2e} emissions for the present month as recorded in d)(7)o., plus the total CO_{2e} emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds.
- (8) See 40 CFR Part 60, Subpart Db (40 CFR 60.40b–60.49b).
- (9) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480-7575).

e) Reporting Requirements

- (1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas or ethane with a maximum sulfur content of 0.005 gr/dscf was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
- (2) The permittee shall submit quarterly deviation (excursion) reports that identify:
 - a. all exceedances of the rolling, 12-month NO_x, CO, VOC, PE/PM₁₀/PM_{2.5} and CO_{2e} emissions limitations; and
 - b. all exceedances of the maximum one-hour and rolling, 12-month boiler heat input restrictions.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (3) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system):
 - a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of NO_x emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, OAC Chapters 3745-14 and 3745-23, and any other applicable rules or regulations. The report shall document the date, commencement and completion times,

duration, and magnitude of each exceedance, as well as the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).

- b. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR Parts 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of continuous CO₂ or O₂ monitoring system downtime and malfunction while the emissions unit was on line.
- c. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:
 - i. the facility name and address;
 - ii. the manufacturer and model number of the continuous NO_x and CO₂ or O₂ and other associated monitors;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
 - iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
 - v. the total NO_x emissions for the calendar quarter (tons);
 - vi. the total operating time (hours) of the emissions unit;
 - vii. the total operating time of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) while the emissions unit was in operation;
 - viii. results and date of quarterly cylinder gas audits;
 - ix. unless previously submitted, results and date of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
 - x. unless previously submitted, the results of any relative accuracy test audit showing the continuous NO_x and CO₂ or O₂ monitor out-of-control and the compliant results following any corrective actions;
 - xi. the date, time, and duration of any/each malfunction** of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system), emissions unit, and/or control equipment;

- xii. the date, time, and duration of any downtime** of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) and/or control equipment while the emissions unit was in operation; and
- xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred, or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

(4) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system):

- a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of CO emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, OAC Chapter 3745-21, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as, the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).
- b. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR Parts 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports within 30 days following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of continuous CO₂ or O₂ monitoring system downtime and malfunction while the emissions unit was on line.
- c. These quarterly reports shall be submitted by January 30, April 30, July 30, and October 30 of each year and shall include the following:
 - i. the facility name and address;
 - ii. the manufacturer and model number of the continuous CO and CO₂ or O₂ and other associated monitors;

- iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
- iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;
- v. the total CO emissions for the calendar quarter (tons);
- vi. the total operating time (hours) of the emissions unit;
- vii. the total operating time of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) while the emissions unit was in operation;
- viii. results and dates of quarterly cylinder gas audits;
- ix. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
- x. unless previously submitted, the results of any relative accuracy test audit showing the continuous CO and CO₂ or O₂ monitor out-of-control and the compliant results following any corrective actions;
- xi. the date, time, and duration of any/each malfunction** of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system), emissions unit, and/or control equipment;
- xii. the date, time, and duration of any downtime** of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) and/or control equipment while the emissions unit was in operation; and
- xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred, or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless of whether there is an exceedance of any applicable limit

- (5) See 40 CFR Part 60, Subpart Db (40 CFR 60.40b–60.49b).
- (6) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480-7575).

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitations:

NO_x emissions shall not exceed 0.010 lb/MMBtu of actual heat input as a rolling, 30-day average and 4.00 lbs/hr, excluding periods of startup and shutdown.

NO_x emissions shall not exceed 0.020 lb/MMBtu of actual heat input and 8.00 lbs/hr during periods of startup and shutdown.

Applicable Compliance Method:

Initial and continuing compliance with short-term emissions limitations shall be demonstrated based upon the NO_x CEMS monitoring and recordkeeping requirements specified in d)(3).

b. Emissions Limitations:

CO emissions shall not exceed 0.035 lb/MMBtu of actual heat input as a rolling, 12-month average and 14.00 lbs/hr.

Applicable Compliance Method:

Initial and continuing compliance with short-term emissions limitations shall be demonstrated based upon the CO CEMS monitoring and recordkeeping requirements specified in d)(5).

c. Emissions Limitations:

VOC emissions shall not exceed 0.0054 lb/MMBtu of actual heat input and 2.16 lbs/hr.

Applicable Compliance Method:

Compliance with the short-term emissions limitations shall be demonstrated based on the testing requirements in f)(4).

d. Emissions Limitations:

PE and emissions of PM₁₀ and PM_{2.5} shall not exceed 0.005 lb/MMBtu of actual heat input and 2.00 lbs/hr.

Applicable Compliance Method:

Compliance with the short-term emissions limitations shall be demonstrated based on the testing requirements in f)(4).

e. Emissions Limitations:

Emissions from emissions units B007-B009, combined, shall not exceed:

8.76 tons of NO_x per rolling, 12-month period;

30.70 tons of CO per rolling, 12-month period;

4.73 tons of VOC per rolling, 12-month period;

4.38 tons of PE/PM₁₀/PM_{2.5} per rolling, 12-month period; and

102,500 tons of CO_{2e} per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the rolling, 12-month emissions limitations shall be demonstrated by the recordkeeping in d)(7).

f. Emissions Limitations:

Visible PE from the stack shall not exceed twenty percent opacity, as a six-minute average, except as provided by the rule.

Applicable Compliance Method:

Compliance with the opacity limitation shall be demonstrated based on the testing requirements in f)(4).

- (2) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) in units of the applicable standard(s), to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specifications 2 and 3.

Personnel from the Ohio EPA Central Office and the appropriate Ohio EPA District Office or local air agency shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the appropriate Ohio EPA District Office or local air agency and one copy to Ohio EPA Central Office and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification of the continuous NO_x monitoring system (including the associated continuous CO₂ or O₂ monitoring system) shall be granted upon determination by the Ohio EPA, Central Office that the system meets the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2 and 3 and ORC Section 3704.03(l).

Ongoing compliance with the NO_x emissions limitations shall be demonstrated through the data collected as required in the monitoring and recordkeeping section of this permit;

and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.

Ongoing compliance with the CO₂ or O₂ monitoring requirements contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the monitoring and record keeping section of this permit; and demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.

- (3) Within 60 days of achieving the maximum production rate at which the emissions unit(s) will be operated, but not later than 180 days after initial startup, the permittee shall conduct certification tests of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) in units of the applicable standard(s), to demonstrate compliance with 40 CFR Part 60, Appendix B, Performance Specifications 3 and 4 or 4a (as appropriate) and 6; and ORC section 3704.03(I).

Personnel from the Ohio EPA Central Office and the appropriate Ohio EPA District Office or local air agency shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. Two copies of the test results shall be submitted to Ohio EPA, one copy to the appropriate Ohio EPA District Office or local air agency and one copy to Ohio EPA Central Office, and pursuant to OAC rule 3745-15-04, within 30 days after the test is completed.

Certification of the continuous CO monitoring system (including the associated continuous CO₂ or O₂ monitoring system) shall be granted upon determination by the Ohio EPA Central Office that the system meets the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 3 and 4 or 4a (as appropriate) and 6 and ORC section 3704.03(I).

Ongoing compliance with the CO emission limitations contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the requirements of 40 CFR Part 60.

Ongoing compliance with the CO₂ or O₂ monitoring requirements contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the monitoring and record keeping section of this permit; and demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.

- (4) Performance testing shall be conducted as required in OAC rules 3745-31-10 through 20. The permittee shall conduct, or have conducted, emission testing for this emissions unit within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility, as applicable, in accordance with the following requirements:

- a. The emission testing shall be conducted to demonstrate compliance with the emissions limitations specified in b)(1) for VOC, PE/PM₁₀/PM_{2.5} and visible PE.

- b. The following test method(s) shall be employed to demonstrate compliance with the allowable mass emission rate(s):
 - for VOC, Methods 1-4 and 18 and 25 of 40 CFR Part 60 Appendix A;
 - for PE/PM₁₀/PM_{2.5}, Methods 1-5 and 202 of 40 CFR Part 60 Appendix A; and
 - for visible PE, Method 9 of 40 CFR Part 60 Appendix A.

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA.
 - c. The test(s) for each pollutant shall be conducted while the emissions unit is operating at or near its maximum capacity, while burning representative fuel and/or combination of fuels, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.
 - d. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).
 - e. Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
 - f. A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.
- g) Miscellaneous Requirements
- (1) None.

3. P801, Ethylene Manufacturing Unit

Operations, Property and/or Equipment Description:

1,500 KTA ethylene manufacturing process; includes feed preheating, cracking, quenching, compression, caustic scrubbing, precooling/drying, separation, and hydrogenation. Process vents, storage tanks, and startup/shutdown/maintenance/upsets controlled by flare and thermal oxidizer.

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (1) None.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	Best Available Control Technology (BACT) for volatile organic compounds (VOC) – see b)(2)a.i. BACT for carbon dioxide equivalents (CO ₂ e) – see b)(2)a.ii.
b.	ORC 3704.03(T)	Best Available Technology (BAT) for VOC See b)(2)b.
c.	OAC rule 3745-21-09(DD)	See b)(2)c.
d.	40 CFR Part 60, Subpart Kb (40 CFR Part 60.110b – 60.117b) This emissions unit contains storage vessels with a capacity > 75 m ³ used to store volatile organic liquids (VOL) subject to the requirements specified in this section]	Maintain records [40 CFR, Part 60.116b(c)] See b)(2)e. and b)(2)f.
e.	40 CFR Part 60, Subpart VVa (40 CFR Part 60.480a – 60.489a) [In accordance with 40 CFR 60.480a, this emissions unit involves equipment in synthetic organic chemicals manufacturing subject to the requirements specified	Leak detection and repair for equipment within a process unit that produces chemicals listed in §60.489a [40 CFR 60.482-1a through 60.482-11a] See b)(2)c.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	in this section.]	
f.	40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668) [In accordance with 40 CFR 60.660(b)(2), this emissions unit involves a distillation unit subject to the control measures specified in this section.]	Combust the emissions in a flare that meets the requirements of §60.18 [40 CFR 60.662(b)] See b)(2)d.
g.	40 CFR Part 60, Subpart RRR (40 CFR 60.700 – 60.708) [In accordance with 40 CFR 60.700(b), this emissions unit involves a reactor process/recovery system subject to the control measures specified in this section.]	Combust the emissions in a flare that meets the requirements of §60.18 [40 CFR 60.702(b)] See b)(2)d.
h.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.18)	All of the General Provisions of 40 CFR Part 60, Subpart A are applicable except for the following: §60.8(d) does not apply to 40 CFR Subpart VVa [§60.487a(e)]; §60.7(c) does not apply to 40 CFR Subpart NNN [§60.665(k)]; and §60.7(c) does not apply to 40 CFR Subpart RRR [§60.705(k)]
i.	40 CFR Part 61, Subpart J (40 CFR 61.110 – 61.112)	Equipment leak standards and repair for equipment in benzene service [40 CFR 61.110] Comply with 40 CFR Part 61, Subpart V [§61.112(a)] See b)(2)c.
j.	40 CFR Part 61, Subpart V (40 CFR 61.240 - 61.247)	Equipment leak standards and repair for volatile hazardous air pollutants (VHAP/Benzene) [§61.242-1 through §61.242-10] Closed vent system(s) and control device requirements [§61.242-11] See b)(2)c. and b)(2)d.
k.	40 CFR Part 61, Subpart A	General Provisions [§61.01 through

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	(40 CFR 61.01 – 61.19)	§61.19]
I.	40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999) [In accordance with 40 CFR 63.981, this emissions unit involves the control of air emissions from equipment leaks subject (by reference of other Part 63 Subparts) to the requirements specified in this section]	Closed vent system and control equipment requirements [40 CFR 63.982 through 63.988] See b)(2)c. and b)(2)d.
m.	40 CFR Part 63, Subpart UU (40 CFR 63.1019 – 63.1039) [In accordance with 40 CFR 63.1019, this emissions unit involves closed vent systems, control devices and routing of air emissions to a fuel gas system for air emission control subject (by reference of other Part 63 Subparts) to the requirements specified in this section]	Equipment leak standards and repair [40 CFR 63.1021 through 63.1037] See b)(2)c. and b)(2)d.
n.	40 CFR Part 63, Subpart XX (40 CFR 63.1080 – 63.1090 and 63.1097) [In accordance with 40 CFR 63.1083 and 63.1093, this emissions unit involves heat exchange systems subject to the requirements specified in this section.]	Leak monitoring and repair for cooling water [40 CFR 63.1085] See b)(2)c.
o.	40 CFR Part 63, Subpart YY (40 CFR 63.1100 – 63.1114) [In accordance with 40 CFR 63.1100(a), this emissions unit involves process vents and equipment leaks subject to the control measures and requirements specified in this section.]	Reduce emissions of organic hazardous air pollutant (HAP) by 98 weight-percent; or reduce organic HAP or total organic compound (TOC) to a concentration of 20 parts per million by volume; whichever is less stringent, by venting emissions through a closed vent system to any combination of control devices and meet the requirements specified in §63.982(b) and c)(2). [40 CFR 63.1103(e)] See b)(2)d.
p.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	All of the General Provisions of 40 CFR Part 63, Subpart A apply except as indicated:

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		The provisions of §63.1 to §63.16 do not apply to 40 CFR Part 63, Subpart SS and Subpart UU except as noted in referencing subparts [§63.980 and §63.1019]; The provisions of §63.1 to §63.16 do not apply to 40 CFR Part 63, Subpart XX except as specified in 40 CFR Part 63, Subpart YY [§63.1083]; and §63.1100(b) – <i>Subpart A requirements</i> indicates which parts of the General Provisions in 40 CFR 63.1-16 apply to 40 CFR Part 63, Subpart YY
q.	OAC rule 3745-21-07	See b)(2)g.
r.	OAC rule 3745-21-13	See b)(2)h.

(2) Additional Terms and Conditions

- a. The permittee shall employ BACT for this emissions unit. BACT has been determined to be the following:
 - i. for VOC emissions:
 - (a) use of closed vent systems controlled with high pressure (HP) flare achieving a destruction efficiency of 98% for VOC emissions from the following:
 - (i) startup/shutdown/maintenance/upsets;
 - (ii) spent caustic degassing drum;
 - (iii) spent caustic drain drum; and
 - (iv) pressure relief valve (PRV) leaks/releases.
 - (b) use of thermal oxidizer (TO) achieving a destruction efficiency of 99.5% for VOC emissions from the following:
 - (i) quench water drain drum;
 - (ii) wet air oxidation unit;
 - (iii) dimethyl disulphide (DMDS) tank; and
 - (iv) wash oil tank;

- (c) tail gas from the hydrogenation section shall be used as fuel gas for firing in process cracking furnace(s);
 - (d) implementation of a facility specific program reducing fugitive component equipment leaks for applicable component equipment in the ethylene manufacturing unit;
 - (e) implementation of a program to minimize flaring.
- ii. for GHG emissions:
 - (a) implementation of a facility specific program reducing fugitive component equipment leaks for applicable component equipment in the ethylene manufacturing unit (see C.12.b)(2)e.).
- b. BAT requirements for VOC emissions under ORC 3704.03(T) have been determined to be compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20. It should be noted that emissions of GHG are not subject to BAT pursuant to OAC 3745-34-31(E)(8).
 - c. The following regulations establish requirements for component equipment leak control and repair for VOC, HAPs, VHAP/Benzene, and GHGs from the ethylene manufacturing unit:
 - i. for VOC:
 - (a) OAC rule 3745-31-10 through 20;
 - (b) ORC 3704.03(T);
 - (c) OAC rule 3745-21-09(DD); and
 - (d) 40 CFR Part 60, Subpart VVa.
 - ii. for HAP:
 - (a) 40 CFR Part 63, Subpart SS; and
 - (b) 40 CFR Part 63, Subpart UU.
 - iii. for VHAP/Benzene:
 - (a) 40 CFR Part 61, Subpart J; and
 - (b) 40 CFR Part 61, Subpart V.
 - iv. for GHGs:
 - (a) OAC rule 3745-31-10 through 20.

Note: A separate emissions unit (P807) associated with fugitive leaks of VOC, HAP, VHAP/Benzene, and GHGs from all component equipment at the facility subject to the leak control and repair regulations above has been established. For efficient permitting structure, the applicable requirements (limitations, operational restrictions, monitoring, record keeping, reporting, and testing) associated with equipment leak control and repair for VOC, HAP, VHAP/Benzene, and GHGs are contained within the requirements of emissions unit P807.

- d. Closed vent systems controlled with HP flare and thermal oxidizer control of quench water drain drum are utilized to meet the requirements of the following regulations:
 - i. for VOC:
 - (a) OAC rule 3745-31-10 through 3745-31-20;
 - (b) ORC 3704.03(T);
 - (c) 40 CFR Part 60, Subpart NNN; and
 - (d) 40 CFR Part 60, Subpart RRR.
 - ii. for HAP:
 - (a) 40 CFR Part 63, Subpart SS; and
 - (b) 40 CFR Part 63, Subpart YY.
 - iii. for VHAP/Benzene:
 - (a) 40 CFR Part 61, Subpart J.
 - (b) 40 CFR Part 61, Subpart V.

Note: The thermal oxidizer(s) controlling quench water drain drum emissions and the closed vent systems controlled with HP flare are permitted as separate and individual emissions units (emissions units P001, P002, and P003 respectively). For efficient permitting structure, the applicable operational restrictions, monitoring, record keeping, reporting, and testing associated with thermal oxidizer control and the closed vent systems with HP flare control are contained within the requirements of emissions units P001, P002, and P003.

- e. 40 CFR Part 60, Subpart Kb is applicable to the wash oil tank within the ethylene manufacturing line. Records of the volatile organic liquid (VOL) are required to be maintained per 40 CFR, Part 60.116b(c).
- f. 40 CFR Part 60, Subpart Kb is not applicable to the DMDS tank within the ethylene manufacturing line in accordance with 40 CFR Part 60.110b(d)(2) due to the DMDS tank being a pressure vessel designed to operate in excess of 204.9 kPa (29.7 psi) and without emissions to the atmosphere.

- g. The requirements of OAC rule 3745-21-07 are not applicable to this emissions unit in accordance with OAC rule 3745-21-07(M)(3)(c).
- h. The requirements of OAC rule 3745-21-13 are not applicable to this emissions unit in accordance with OAC rule 3745-21-13(A)(1).

c) Operational Restrictions

- (1) This permit utilizes incorporation by reference for the following operational restrictions:
 - a. See 40 CFR Part 60, Subpart VVa* (40 CFR 60.480a-489a).
 - b. See 40 CFR Part 60, Subpart NNN* (40 CFR 60.660-668).
 - c. See 40 CFR Part 60, Subpart RRR* (40 CFR 60.700-708).
 - d. See 40 CFR Part 61, Subpart J* (40 CFR 61.110-112).
 - e. See 40 CFR Part 61, Subpart V* (40 CFR 61.240-247).
 - f. See 40 CFR Part 63, Subpart SS* (40 CFR 63.980-999).
 - g. See 40 CFR Part 63, Subpart UU* (40 CFR 63.1019-1039).
 - h. See 40 CFR Part 63, Subpart XX (40 CFR 63. 63.1080 – 63.1090 and 63.1097).
 - i. See 40 CFR Part 63, Subpart YY* (40 CFR 63.1100-1114).

*Operational restrictions associated with leak control and repair; closed vent systems controlled by HP flare; and thermal oxidizer(s) control of quench water drain drum are contained within the requirements of emissions unit P807, P001, P002, and P003.

d) Monitoring and/or Recordkeeping Requirements

- (1) This permit utilizes incorporation by reference for the following monitoring and record keeping requirements:
 - a. See 40 CFR Part 60, Subpart VVa* (40 CFR 60.480a-489a)*.
 - b. See 40 CFR Part 60, Subpart NNN* (40 CFR 60.660-668)*.
 - c. See 40 CFR Part 60, Subpart RRR* (40 CFR 60.700-708)*.
 - d. See 40 CFR Part 61, Subpart J* (40 CFR 61.110-112)*.
 - e. See 40 CFR Part 61, Subpart V* (40 CFR 61.240-247)*.
 - f. See 40 CFR Part 63, Subpart SS* (40 CFR 63.980-999).
 - g. See 40 CFR Part 63, Subpart UU* (40 CFR 63.1019-1039).
 - h. See 40 CFR Part 63, Subpart XX (40 CFR 63. 63.1080 – 63.1090 and 63.1097).

- i. See 40 CFR Part 63, Subpart YY* (40 CFR 63.1100-1114).

*Monitoring and record keeping associated with leak control and repair; closed vent systems controlled with HP flare; and thermal oxidizer(s) control of quench water drain drum are contained within the requirements of emissions units P807, P001, P002, and P003.

e) Reporting Requirements

- (1) This permit utilizes incorporation by reference for the following reporting requirements:
 - a. See 40 CFR Part 60, Subpart VVa* (40 CFR 60.480a-489a)*.
 - b. See 40 CFR Part 60, Subpart NNN* (40 CFR 60.660-668)*.
 - c. See 40 CFR Part 60, Subpart RRR* (40 CFR 60.700-708)*.
 - d. See 40 CFR Part 61, Subpart J* (40 CFR 61.110-112)*.
 - e. See 40 CFR Part 61, Subpart V* (40 CFR 61.240-247)*.
 - f. See 40 CFR Part 63, Subpart SS* (40 CFR 63.980-999).
 - g. See 40 CFR Part 63, Subpart UU* (40 CFR 63.1019-1039).
 - h. See 40 CFR Part 63, Subpart XX (40 CFR 63.63.1080 – 63.1090 and 63.1097).
 - i. See 40 CFR Part 63, Subpart YY* (40 CFR 63.1100-1114).

*Reporting associated with leak control and repair; closed vent systems controlled with HP flare; and thermal oxidizer(s) control of quench water drain drum are contained within the requirements of emissions unit P807, P001, P002, and P003.

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:
 - a. Emission Limitations:
 - i. Combust the emissions in a flare that meets the requirements of §60.18. The flare requirements of §60.18 are consistent with a destruction efficiency of 98% for VOC emissions required in b)(2)a.i.(a);
 - ii. Reduce emissions from quench water drain drum with a thermal oxidizer achieving a VOC destruction efficiency of 99.5%;
 - iii. Reduce emissions of organic HAP by 98 weight-percent; or reduce organic HAP or TOC to a concentration of 20 parts per million by volume; whichever is less stringent.



Final Permit-to-Install
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004
Effective Date: 12/21/2018

Applicable Compliance Method:

Refer to emissions units P001, P002, and P003 for applicable compliance methods for the above emission limitations.

g) Miscellaneous Requirements

- (1) None.

4. P802, High-Density Polyethylene Manufacturing Unit #1

Operations, Property and/or Equipment Description:

350 KTA high density polyethylene (HDPE) manufacturing process; includes catalyst activation & feed systems, reactor system, separation/degassing, solvent recovery and pelletizing sections, pellet blending, handling, and storage.

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:
 - (1) b)(1)d., b)(2)g. and b)(2)h.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	Best Available Control Technology (BACT) for volatile organic compounds (VOC), particulate matter 10 microns or less in size (PM_{10}), particulate matter 2.5 microns or less in size ($PM_{2.5}$), carbon monoxide (CO), nitrogen oxides (NO_x), and carbon dioxide equivalents (CO_2e) See b)(2)a., b)(2)b. and b)(2)c.
b.	ORC 3704.03(T)	Best Available Technology (BAT) for CO See b)(2)d.
c.	OAC rule 3745-31-05(A)(3) June 30, 2008	See b)(2)e. and b)(2)f.
d.	OAC rule 3745-31-05(A)(3)(a)(ii) June 30, 2008	See b)(2)g. and b)(2)h.
e.	OAC rule 3745-21-09(DD)	See b)(2)m.
f.	40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566) [In accordance with 40 CFR 60.560, this emissions unit involves equipment in the manufacturing of polyethylene subject to the requirements specified in this section.]	Combust continuous/intermittent vent emissions in a flare that meets the requirements of §60.18 [40 CFR 60.562-1(a)(1)(i)(C)] Detection and repair for equipment leaks of VOC [§60.562-2] See b)(2)i. and b)(2)j.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
g.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.19)	General Provisions [§60.1 through §60.19]
h.	40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999) [In accordance with 40 CFR 63.981, this emissions unit involves the control of air emissions from equipment leaks subject (by reference of other Part 63 Subparts) to the requirements specified in this section]	Closed vent system, fuel gas system, and control equipment requirements [40 CFR 63.982 through 63.988] See b)(2)i. and b)(2)j.
i.	40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550) [In accordance with 40 CFR 63.2435, this emissions unit is a miscellaneous organic chemical manufacturing process unit (MCPU) subject to the requirements specified in this section]	Reduce total organic HAP emissions from process vents by \geq 98 % by weight by venting through closed vent system(s) to any combination of control devices or venting to a flare for process vents [§63.2455 & §63.2460]; Comply with the requirements of 40 CFR Part 63, Subpart UU for equipment leaks [§63.2480] Comply with the requirements of 40 CFR Part 63, Subpart G for process wastewater and liquid streams in open systems [§63.2485] Comply with the requirements of 40 CFR Part 63, Subpart F for heat exchange systems [§63.2490] See b)(2)i. and b)(2)j.
j.	40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480-7575) [In accordance with 40 CFR 63.7499 and 63.7575, the catalyst activator furnaces are new process heaters subject to the work practice standards specified in this section.]	Table 3 to 40 CFR Part 63, Subpart DDDDD – Work Practice Standards [40 CFR 63.7500].
k.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	General Provisions [§63.1 through §63.16] Table 12 to Subpart FFFF of 40 CFR Part

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		63 – Applicability of General Provisions to Subpart FFFF shows which parts of the General Provisions in 40 CFR 63.1-16 apply to MCPU operations. Table 10 to 40 CFR Part 63, Subpart DDDDD – Applicability of General Provisions (Subpart A) to Subpart DDDDD shows which parts of the General Provisions in 40 CFR Part 63.1 – 63.16 apply.
I.	OAC rule 3745-21-07	See b)(2)k.
m.	OAC rule 3745-21-13	See b)(2)l.
n.	OAC rule 3745-17-11(B)	See b)(2)m.
o.	OAC rule 3745-17-10(B)(1)	See b)(2)m.
p.	OAC rule 3745-17-07(A)	See b)(2)m.
q.	OAC rule 3745-18-06	See b)(2)n.
r.	OAC rule 3745-110-03	See b)(2)o.

The HDPE manufacturing process unit (emissions unit P802) shares a catalyst activation section with a second HDPE manufacturing process unit at the facility (emissions unit P803). Limitations and requirements for the shared activation section (which includes activator jacket vents, activator filter vents, co-catalyst container change activity, and co-catalyst disposal) are contained within the terms and conditions below and are also contained in the terms and conditions of emissions unit P803).

(2) Additional Terms and Conditions

- a. BACT requirements for the catalyst activation section of the HPDE manufacturing process has been determined to be the following:
 - i. combustion emissions associated with the jackets of two catalyst activator furnaces shall meet the following standards and limitations:
 - (a) for NO_x emissions:
 - (i) 0.098 lb/MMBtu;
 - (ii) 0.51 lb/hr (for each individual furnace); and
 - (iii) 4.47 tons per rolling 12-month period for the two activator furnaces combined.
 - (b) for CO emissions:
 - (i) 0.082 lb/MMBtu;
 - (ii) 0.43 lb/hr (for each individual furnace); and
 - (iii) 3.74 tons per rolling 12-month period for the two activator furnaces combined.

- (c) for VOC emissions:
 - (i) 0.0054 lb/MMBtu;
 - (ii) 0.03 lb/hr (for each individual furnace); and
 - (iii) 0.25 ton per rolling 12-month period for two activator furnaces combined.
- (d) for emissions of PM₁₀ and PM_{2.5}**:
 - (i) 0.0075 lb/MMBtu;
 - (ii) 0.04 lb/hr (for each individual furnace);
 - (iii) 0.34 ton per rolling 12-month period for two activator furnaces combined; and
 - (iv) visible particulate emissions from each individual catalyst activator furnace stack shall not exceed five percent opacity, as a six-minute average.

**All emissions of particulate matter are PM₁₀/PM_{2.5} and the emission rates of PM₁₀ and PM_{2.5} are considered equivalent for permitting purposes.

- (e) for CO₂e emissions:
 - (i) 117 lbs/MMBtu; and
 - (ii) 5,335 tons per rolling 12-month period for two activator furnaces combined.
- b. BACT requirements for HDPE manufacturing process for VOC emissions other than the catalyst activation furnace combustion emissions (see b)(2)a.i. above) has been determined to be the following:
- i. use of closed vent system controlled with high pressure (HP) flare achieving a destruction efficiency of 98% for VOC emissions from the following:
 - (a) intermediate flash slurry sampler;
 - (b) LSR lights condenser;
 - (c) heavies column; and
 - (d) pressure relief valve (PRV) leaks/releases;
 - ii. use of thermal oxidizer (TO) achieving a destruction efficiency of 99.5% for VOC emissions from the following:

- (a) LPSR condensate separator; and
 - (b) powder conveying package vent;
 - iii. residual VOC in the polyethylene resin exiting the extruder shall be less than 80 ppmv;
 - iv. The combined VOC emissions for all HDPE manufacturing process vents without VOC control (e.g. not vented to flare or TO) shall not exceed 28.00 tons per rolling 12-month period;
 - v. implementation of facility specific program reducing fugitive component equipment leaks including applicable component equipment in the polyethylene manufacturing line (see C.12.b)(2)b. and c.); and
 - vi. implementation of a program to minimize flaring.
- c. BACT requirements for HDPE manufacturing process for PM₁₀/PM_{2.5}* emissions other than the catalyst activation furnace combustion emissions (see b)(2)a.i. above) has been determined to be the following:
- i. use of fabric filtration control for achieving a maximum outlet concentration of 0.005 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5} for the following process vents:
 - (a) catalyst activator jacket vent (R-201A):
 - (i) 0.10 lb/hr and 0.44 ton per rolling 12-month period.
 - (b) catalyst activator jacket vent (R-201B):
 - (i) 0.10 lb/hr and 0.44 ton per rolling 12-month period.
 - (c) catalyst filter vent (S-203A):
 - (i) 0.0015 lb/hr and 0.006 ton per rolling 12-month period.
 - (d) catalyst filter vent (S-203B):
 - (i) 0.0015 lb/hr and 0.006 ton per rolling 12-month period.
 - (e) extruder vent filter (3S-603):
 - (i) 0.015 lb/hr and 0.065 ton per rolling 12-month period.
 - (f) additive vent filter (3S-604):
 - (i) 0.04 lb/hr and 0.175 ton per rolling 12-month period.
 - (g) additive feeder vents (3Q-602A through F):

- (i) 0.001 lb/hr and 0.0044 ton per rolling 12-month period for each individual vent (6 individual vents).
- ii. use of fabric filtration control for achieving a maximum outlet concentration of 0.002 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5} for the following process vents:
 - (a) pellet conveying hopper vent (3V-607):
 - (i) 0.004 lb/hr & 0.0175 ton per rolling 12-month period.
 - (b) pellet hopper vent (3V-702):
 - (i) 0.06 lb/hr & 0.263 tons per rolling 12-month period.
 - (c) pellet & off-spec blender/silo vents (3V-701A through E) & (PE1-19):
 - (i) 0.036 lb/hr & 0.162 ton per rolling 12-month period for six vents combined.
- iii. PM₁₀/PM_{2.5} emissions for the pellet dryer fan vent (3C-603) shall not exceed a maximum outlet concentration of 0.002 gr/dscf and the following lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5}:
 - (i) 0.134 lb/hr & 0.587 ton per rolling 12-month period.
- *All emissions of particulate matter are PM₁₀/PM_{2.5} and the emission rates of PM₁₀ and PM_{2.5} are considered equivalent for permitting purposes.
- iv. visible particulate emissions from each process vent stack controlled with fabric filtration (as identified in b)(2)c.) shall not exceed five percent opacity, as a six-minute average.
- v. catalyst activation system vents associated with co-catalyst container changes shall be controlled by passing vent streams through a seal pot containing mineral oil resulting only in emissions of nitrogen gas used in co-catalyst transfer.
- vi. there shall be no visible emissions of fugitive particulate from the discharge of co-catalyst material to the atmospheric sand pit.
- d. BAT requirements for VOC and PM₁₀/PM_{2.5} emissions under ORC 3704.03(T) have been determined to be compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20. It should be noted that emissions of GHG are not subject to BAT pursuant to OAC 3745-34-31(E)(8).
- e. BAT requirements under OAC rule 3745-31-05(A)(3) have been determined to be:

- i. for sulfur dioxide (SO₂) emissions - use of natural gas fuel in the furnaces in the catalyst activation section of the HPDE manufacturing process;
- ii. for CO and NO_x – compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
- f. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- g. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to emissions of NO_x, CO, and SO₂ from this air contaminant source since the potential to emit is less than 10 tons/year (taking into account the federally enforceable BACT requirements when applicable).
- h. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- i. The following regulations establish requirements for component equipment leak control and repair for VOC, HAPs, and greenhouse gases (GHGs) from the polyethylene manufacturing line:
 - i. for VOCs:
 - (a) OAC rule 3745-31-10 through 20;
 - (b) ORC 3704.03(T);
 - (c) OAC rule 3745-21-09(DD); and
 - (d) 40 CFR Part 60, Subpart DDD;
 - ii. for HAPs:
 - (a) 40 CFR Part 63, Subpart SS; and
 - (b) 40 CFR Part 63, Subpart FFFF;
 - iii. for GHGs:
 - (a) OAC rule 3745-31-10 through 20.

Note: A separate emissions unit (P807) associated with fugitive leaks of VOC, HAP, VHAP/Benzene*, and GHGs from all component equipment at the facility subject to the leak control and repair regulations above has been established. For efficient permitting structure applicable requirements (limitations, operational restrictions, monitoring, record keeping, reporting, and testing) associated with equipment leak control and repair for VOC, HAP, VHAP/Benzene*, and GHGs are contained within the requirements of emissions unit P807.

*It should be noted HDPE manufacturing operations are not subject to regulations for VHAP/Benzene emissions under 40 CFR Part 61.

- j. Closed vent systems controlled with HP flare and thermal oxidizer control of LPSR condensate separator, and powder conveying package vent are utilized to meet the requirements of the following regulations:
 - i. for VOC:
 - (a) OAC rule 3745-31-10 through 3745-31-20;
 - (b) ORC 3704.03(T); and
 - (c) 40 CFR Part 60, Subpart DDD.
 - ii. for HAP:
 - (a) 40 CFR Part 63, Subpart SS; and
 - (b) 40 CFR Part 63, Subpart FFFF.

The thermal oxidizer(s) utilized for control and the closed vent system controlled with HP flare are permitted as separate and individual emissions units (emissions units P001, P002, and P003 respectively). For efficient permitting structure, the applicable operational restrictions, monitoring, record keeping, reporting, and testing associated with thermal oxidizer control and the closed vent systems with flare control are contained with the requirements of emissions units P001, P002, and P003.

- k. This emissions unit is not subject to OAC rule 3745-21-07 in accordance with OAC rule 3745-21-07(M)(3)(c).
- l. This emissions unit is not subject to OAC rule 3745-21-13 in accordance with OAC rule 3745-21-13(A)(1).
- m. The emission limitation specified by this rule is less stringent than BACT requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
- n. Exempt pursuant to OAC rule 3745-18-06(A) since only natural gas fuel is burned in this emissions unit.
- o. Exempt pursuant to OAC rule 3745-110-03(K)(16).
- p. The catalyst activation section is shared by the two HDPE manufacturing process units contained in this permit (emissions units P802 and P803). Limitations and requirements for the catalyst activation section are presented within the individual terms and conditions for emissions units P802 and P803.
- q. The catalyst activator jacket vents and the catalyst activator filter vents are part of the catalyst activation section which is shared by the two HDPE manufacturing process units contained in this permit (emissions units P802 and P803).

Limitations and requirements for the catalyst activation section are presented within the individual terms and conditions for emissions units P802 and P803).

c) Operational Restrictions

- (1) The permittee shall burn only natural gas fuel with a maximum sulfur content not to exceed 0.005 gr/dscf in this emissions unit.
- (2) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
- (3) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (4) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).
- (5) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 63.7575).

d) Monitoring and/or Recordkeeping Requirements

- (1) For each day during which the permittee burns a fuel other than natural gas fuel with a maximum sulfur content of 0.005 gr/dscf, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.
- (2) The permittee shall determine the VOC content in the polyethylene resin exiting the extruder at least once per week using Test Method 24 as set forth in "Appendix on Test Methods" in 40 CFR, Part 60 ("Standards of Performance for New Stationary Sources") or other method as approved by Ohio EPA.
- (3) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks for this emissions unit identified in b)(2)c. The presence or absence of any visible emissions for each individual stack shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emissions incident; and
 - e. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emissions incident has occurred. The observer does not have to document the exact start and end times for the visible emissions incident under item (d) above or continue the daily check until the incident has ended. The observer may indicate that the visible emissions incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal

operations or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions or specify the corrective actions that were taken to eliminate abnormal visible emissions.

- (4) The permittee shall perform daily checks, when the emissions unit is in operation, for any visible emissions of fugitive particulate from the discharge of co-catalyst material to the atmospheric sand pit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emissions incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
- (5) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
- (6) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (7) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).
- (8) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 63.7575).

e) Reporting Requirements

- (1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
- (2) The permittee shall submit quarterly deviation (excursion) reports that identify the results of any testing showing the residual VOC in the polyethylene resin exiting the extruder being greater than or equal to 80 ppmv.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (3) The permittee shall submit semiannual written reports that identify:
 - a. all days during which any visible particulate emissions were observed from the stacks for this emissions unit identified in b)(2)c.;
 - b. all days during which any visible emissions of fugitive particulate were observed from the discharge of co-catalyst material to the atmospheric sand pit; and
 - c. any corrective actions taken to eliminate the visible particulate emissions.

These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

- (4) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
- (5) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (6) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).
- (7) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 63.7575).

f) Testing Requirements

- (1) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:
 - a. The emission testing shall be conducted within 180 days after initial startup of the emissions unit;
 - b. The emission testing shall be conducted to demonstrate compliance with:
 - i. the allowable emissions of 0.002 gr/dscf and 0.134 lb/hr for PM₁₀/PM_{2.5} from the pellet dryer fan vent (3C-603);
 - ii. the opacity limitation of five percent, as a six-minute average from the pellet dryer fan vent (3C-603).
 - c. The following test methods shall be employed to demonstrate compliance with the allowable emission limitations:
 - i. For PM₁₀/PM_{2.5} – Methods 1-4 of 40 CFR Part 60, Appendix A, and Methods 201, 201A, and 202 of 40 CFR Part 51, Appendix M and
 - ii. For opacity – Method 9 of 40 CFR, Part 60, Appendix A. Opacity readings shall be taken during the sampling runs for testing of the allowable emission limitations in f)(1)b.i. and f)(1)b.ii.

Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

- d. The test(s) shall be conducted under those representative conditions that challenge to the fullest extent possible a facility's ability to meet the applicable emissions limits and/or control requirements, unless otherwise specified or approved by the appropriate Ohio EPA District Office or local air agency. Although this generally consists of operating the emissions unit at its maximum material input/production rates and results in the highest emission rate of the tested pollutant, there may be circumstances where a lower emissions loading is deemed the most challenging control scenario. Failure to test under these conditions is justification for not accepting the test results as a demonstration of compliance.
- e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the appropriate Ohio EPA District Office or local air agency. The "Intent to Test" notification shall describe in detail the

proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA District Office's or local air agency's refusal to accept the results of the emission test(s).

- f. Personnel from the appropriate Ohio EPA District Office or local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
 - g. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the appropriate Ohio EPA District Office or local air agency.
- (2) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:
- a. Emissions Limitations:
 - i. Combust the emissions in a flare that meets the requirements of §60.18. The flare requirements of §60.18 are consistent with a destruction efficiency of 98% for VOC emissions required in b)(2)b.;
 - ii. Reduce emissions from LPSR condensate separator, and powder conveying package vent with a thermal oxidizer achieving a VOC destruction efficiency of 99.5%;
 - iii. Reduce emissions of organic HAP by 98 weight-percent; or reduce organic HAP or TOC to a concentration of 20 parts per million by volume; whichever is less stringent.

Applicable Compliance Method:

Refer to emissions unit P001, P002, P003, and P807 for applicable compliance methods for the above emission limitations.

- b. Emissions Limitations:
 - i. Combustion emissions associated with the jackets of two catalyst activator furnaces:
 - (a) for NO_x emissions:
 - (i) 0.098 lb/MMBtu;

- (ii) 0.51 lb/hr (for each individual furnace); and
 - (iii) 4.47 tons per rolling 12-month period for the two activator furnaces combined.
- (b) for CO emissions:
- (i) 0.082 lb/MMBtu;
 - (ii) 0.43 lb/hr (for each individual furnace); and
 - (iii) 3.74 tons per rolling 12-month period for the two activator furnaces combined.
- (c) for VOC emissions:
- (i) 0.0054 lb/MMBtu;
 - (ii) 0.03 lb/hr (for each individual furnace); and
 - (iii) 0.25 ton per rolling 12-month period for two activator furnaces combined.
- (d) for emissions of PM₁₀ and PM_{2.5}:
- (i) 0.0075 lb/MMBtu;
 - (ii) 0.04 lb/hr (for each individual furnace); and
 - (iii) 0.34 ton per rolling 12-month period for two activator furnaces combined.
- (e) for CO₂e emissions:
- (i) 117 lbs/MMBtu; and
 - (ii) 5,335 tons per rolling 12-month period for two activator furnaces combined.

Applicable Compliance Method:

The lb/MMBtu, lb/hr, and tons/rolling 12-month period allowable emission limitations were established based on the potential to emit* for the combustion emissions from the catalyst activator furnace jackets. Therefore, no record keeping, deviation reporting, or compliance method calculations are required to demonstrate compliance.

*The potential to emit (PTE) for combustion emissions was determined as follows:

The PTE in lb/MMBtu was determined using AP-42 emission factors from Tables 1.4-1 and 1.4-2 (revised 7/98);

The PTE in lb/hr was determined by multiplying the potential emissions in lb/MMBtu by a maximum heat input of 5.2 MMBtu/hr for each individual furnace;

The PTE in tons per rolling 12-month period was determined by multiplying the combined potential lb/hr emissions from both furnaces by a maximum operating schedule of 8,760 hours per year and dividing by 2,000 lbs/ton.

c. Emissions Limitations:

- i. PM₁₀/PM_{2.5} emission limitations of 0.005 gr/dscf and lb/hr and tons per rolling 12-month period limitations indicated for the following process vents:
 - (a) catalyst activator jacket vent (R-201A):
 - (i) 0.10 lb/hr and 0.44 ton per rolling 12-month period.
 - (b) catalyst activator jacket vent (R-201B):
 - (i) 0.10 lb/hr and 0.44 ton per rolling 12-month period.
 - (c) catalyst filter vent (S-203A):
 - (i) 0.0015 lb/hr and 0.006 ton per rolling 12-month period.
 - (d) catalyst filter vent (S-203B):
 - (i) 0.0015 lb/hr and 0.006 ton per rolling 12-month period.
 - (e) extruder vent filter (3S-603):
 - (i) 0.015 lb/hr and 0.065 ton per rolling 12-month period.
 - (f) additive vent filter (3S-604):
 - (i) 0.04 lb/hr and 0.175 ton per rolling 12-month period.
 - (g) additive feeder vent (3Q-602A through F):
 - (i) 0.001 lb/hr (for each individual vent) and 0.0044 ton per rolling 12-month period (for each individual vent).
- ii. PM₁₀/PM_{2.5} emission limitations of 0.002 gr/dscf and lb/hr and tons per rolling 12-month period limitations indicated for the following process vents:

- (a) pellet dryer fan vent (3C-603):
 - (i) 0.134 lb/hr & 0.587 ton per rolling 12-month period.
- (b) pellet conveying hopper vent (3V-607):
 - (i) 0.004 lb/hr & 0.0175 ton per rolling 12-month period.
- (c) pellet hopper vent (3V-702):
 - (i) 0.06 lb/hr & 0.263 tons per rolling 12-month period.
- (d) pellet & off-spec blender/silo vents (3V-701A through E) & (PE1-19):
 - (i) 0.036 lb/hr & 0.162 ton per rolling 12-month period for six vents combined.

Applicable Compliance Method:

The 0.005 gr/dscf (for sources upstream of pellet dryer) and 0.002 gr/dscf (for pellet dryer and sources downstream of the pellet dryer) were established in accordance with BACT requirements as maximum outlet concentration standards.

The lb/hr limitations were established by multiplying the emission limitation of 0.005 gr/dscf or 0.002 gr/dscf by the following maximum volumetric air flow rates (cfm) and multiplying by lb/7,000 gr and 60 min/hr:

catalyst activator jacket vent (R-201A) – 2,333 cfm

catalyst activator jacket vent (R-201B) – 2,333 cfm

catalyst activator jacket filter vent (S-203A) – 35 cfm

catalyst activator jacket filter vent (S-203B) – 35 cfm

extruder vent filter (3S-603) – 350 cfm

additive vent filter (3S-604) – 933 cfm

additive feeder vent (3Q-602A through F) – 23 cfm (for each individual vent)

pellet dryer fan vent (3C-603) – 7,817 cfm

pellet conveying hopper vent (3V-607) – 233 cfm

pellet hopper vent (3V-702) – 3,500 cfm

pellet & off-spec blender/silo vents (3V-701A through E) & (PE1-19) – 1,075 cfm (for each individual vent)

If required, the permittee shall demonstrate compliance with the gr/dscf and lb/hr limitations in accordance with Methods 1-4 of 40 CFR Part 60, Appendix A and Methods 201, 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The tons per rolling 12-month period limitations were established by multiplying the lb/hr limitations by a maximum operating schedule of 8,760 hours per year and dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr limitations, compliance with the rolling 12-month limitations shall also be demonstrated.

d. Emissions Limitations:

Visible particulate emissions from each individual catalyst activator furnace stack shall not exceed five percent opacity, as a six-minute average.

Visible particulate emissions from each process vent stack controlled with fabric filtration (as identified in b)(2)c.) shall not exceed five percent opacity, as a six-minute average.

Applicable Compliance Method:

If required, compliance shall be demonstrated using Test Method 9 as set forth in "Appendix on Test Methods" in 40 CFR, Part 60 ("Standards of Performance for New Stationary Sources").

e. Emissions Limitation:

The combined VOC emissions for all HDPE manufacturing process vents without VOC control (e.g. not vented to flare or TO) shall not exceed 28.00 tons per rolling 12-month period.

Applicable Compliance Method:

The annual limitation represents the potential to emit based on a maximum production capacity of 350,000 metric tons of polyethylene resin pellets and a residual VOC in extruded pellets of less than 80 ppmv. Therefore, provided compliance is shown with the residual VOC requirement of less than 80 ppmv, compliance with the annual emission limitation shall also be demonstrated.

f. Emissions Limitation:

There shall be no visible emissions of fugitive particulate from the discharge of co-catalyst material to the atmospheric sand pit.

Applicable Compliance Method:

If required, compliance with the visible emissions limitation for the fugitive dust identified in this permit shall be determined in accordance with U.S. EPA Method 22



Final Permit-to-Install
PTTGCA Petrochemical Complex
Permit Number: P0124972
Facility ID: 0607135004
Effective Date: 12/21/2018

g) Miscellaneous Requirements

(1) None.

5. P803, High-Density Polyethylene Manufacturing Unit #2

Operations, Property and/or Equipment Description:

350 KTA high density polyethylene (HDPE) manufacturing process; includes catalyst activation & feed systems, reactor system, separation/degassing, solvent recovery and pelletizing sections, pellet blending, handling, and storage.

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:
 - (1) b)(1)d., b)(2)g. and b)(2)h.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	Best Available Control Technology (BACT) for volatile organic compounds (VOC), particulate matter 10 microns or less in size (PM ₁₀), particulate matter 2.5 microns or less in size (PM _{2.5}), carbon monoxide (CO), nitrogen oxides (NO _x) and carbon dioxide equivalents (CO _{2e}) See b)(2)a., b)(2)b. and b)(2)c.
b.	ORC 3704.03(T)	Best Available Technology (BAT) for CO See b)(2)d.
c.	OAC rule 3745-31-05(A)(3) June 30, 2008	See b)(2)e. and b)(2)f.
d.	OAC rule 3745-31-05(A)(3)(a)(ii) June 30, 2008	See b)(2)g. and b)(2)h.
e.	OAC rule 3745-21-09(DD)	See b)(2)m.
f.	40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566) [In accordance with 40 CFR 60.560, this emissions unit involves equipment in the manufacturing of polyethylene subject to the requirements specified in this section.]	Combust continuous/intermittent vent emissions in a flare that meets the requirements of §60.18 [40 CFR 60.562-1(a)(1)(i)(C)] Detection and repair for equipment leaks of VOC [§60.562-2] See b)(2)i. and b)(2)j.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
g.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.19)	General Provisions [§60.1 through §60.19]
h.	40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999) [In accordance with 40 CFR 63.981, this emissions unit involves the control of air emissions from equipment leaks subject (by reference of other Part 63 Subparts) to the requirements specified in this section]	Closed vent system, fuel gas system, and control equipment requirements [40 CFR 63.982 through 63.988] See b)(2)i. and b)(2)j.
i.	40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550) [In accordance with 40 CFR 63.2435, this emissions unit is a miscellaneous organic chemical manufacturing process unit (MCPU) subject to the requirements specified in this section]	Reduce total organic HAP emissions from process vents by \geq 98 % by weight by venting through closed vent system(s) to any combination of control devices or venting to a flare for process vents [§63.2455 & §63.2460]; Comply with the requirements of 40 CFR Part 63, Subpart UU for equipment leaks [§63.2480] Comply with the requirements of 40 CFR Part 63, Subpart G for process wastewater and liquid streams in open systems [§63.2485] Comply with the requirements of 40 CFR Part 63, Subpart F for heat exchange systems [§63.2490] See b)(2)i. and b)(2)j.
j.	40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480-7575) [In accordance with 40 CFR 63.7499 and 63.7575, the catalyst activator furnaces are new process heaters subject to the work practice standards specified in this section.]	Table 3 to 40 CFR Part 63, Subpart DDDDD – Work Practice Standards [40 CFR 63.7500].
k.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	General Provisions [§63.1 through §60.16] Table 12 to Subpart FFFF of 40 CFR Part

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		63 – Applicability of General Provisions to Subpart FFFF shows which parts of the General Provisions in 40 CFR 63.1-16 apply to MCPU operations. Table 10 to 40 CFR Part 63, Subpart DDDD – Applicability of General Provisions (Subpart A) to Subpart DDDDD shows which parts of the General Provisions in 40 CFR Part 63.1 – 63.16 apply.
I.	OAC rule 3745-21-07	See b)(2)k.
m.	OAC rule 3745-21-13	See b)(2)l.
n.	OAC rule 3745-17-11(B)	See b)(2)m.
o.	OAC rule 3745-17-10(B)(1)	See b)(2)m.
p.	OAC rule 3745-17-07(A)	See b)(2)m.
q.	OAC rule 3745-18-06	See b)(2)n.
r.	OAC rule 3745-110-03	See b)(2)o.

The HDPE manufacturing process unit (emissions unit P802) shares a catalyst activation section with a second HDPE manufacturing process unit at the facility (emissions unit P803). Limitations and requirements for the shared activation section (which includes activator jacket vents, activator filter vents, co-catalyst container change activity, and co-catalyst disposal) are contained within the terms and conditions below and are also contained in the terms and conditions of emissions unit P803.

(2) Additional Terms and Conditions

- a. BACT requirements for the catalyst activation section of the HPDE manufacturing process has been determined to be the following:
 - i. combustion emissions associated with the jackets of two catalyst activator furnaces shall meet the following standards and limitations:
 - (a) for NO_x emissions:
 - (i) 0.098 lb/MMBtu;
 - (ii) 0.51 lb/hr (for each individual furnace); and
 - (iii) 4.47 tons per rolling 12-month period for the two activator furnaces combined.
 - (b) for CO emissions:
 - (i) 0.082 lb/MMBtu;
 - (ii) 0.43 lb/hr (for each individual furnace); and
 - (iii) 3.74 tons per rolling 12-month period for the two activator furnaces combined.

- (c) for VOC emissions:
 - (i) 0.0054 lb/MMBtu;
 - (ii) 0.03 lb/hr (for each individual furnace); and
 - (iii) 0.25 ton per rolling 12-month period for two activator furnaces combined.
 - (d) for emissions of PM₁₀ and PM_{2.5}**:
 - (i) 0.0075 lb/MMBtu;
 - (ii) 0.04 lb/hr (for each individual furnace);
 - (iii) 0.34 ton per rolling 12-month period for two activator furnaces combined; and
 - (iv) visible particulate emissions from each individual catalyst activator furnace stack shall not exceed five percent opacity, as a six-minute average.
 - (e) for CO₂e emissions:
 - (i) 117 lbs/MMBtu; and
 - (ii) 5,335 tons per rolling 12-month period for two activator furnaces combined.
- b. BACT requirements for HDPE manufacturing process for VOC emissions other than the catalyst activation furnace combustion emissions (see b)(2)a.i. above) has been determined to be the following:
- i. use of closed vent system controlled with high pressure (HP) flare achieving a destruction efficiency of 98% for VOC emissions from the following:
 - (a) intermediate flash slurry sampler;
 - (b) LSR lights condenser;
 - (c) heavies column; and
 - (d) pressure relief valve (PRV) leaks/releases.
 - ii. use of thermal oxidizer (TO) achieving a destruction efficiency of 99.5% for VOC emissions from the following:

- (a) LPSR condensate separator; and
 - (b) powder conveying package vent.
 - iii. residual VOC in the polyethylene resin exiting the extruder shall be less than 80 ppmv;
 - iv. The combined VOC emissions for all HDPE manufacturing process vents without VOC control (e.g. not vented to flare or TO) shall not exceed 28.00 tons per rolling 12-month period;
 - v. implementation of facility specific program reducing fugitive component equipment leaks including applicable component equipment in the polyethylene manufacturing line (see C.12.b)(2)b. and c.); and
 - vi. implementation of a program to minimize flaring.
- c. BACT requirements for HDPE manufacturing process for PM₁₀/PM_{2.5}* emissions other than the catalyst activation furnace combustion emissions (see b)(2)a.i. above) has been determined to be the following:
- i. use of fabric filtration control for achieving a maximum outlet concentration of 0.005 gr/dscf for PM₁₀/PM_{2.5} and lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5} for the following process vents:
 - (a) catalyst activator jacket vent (R-201A):
 - (i) 0.10 lb/hr and 0.44 ton per rolling 12-month period.
 - (b) catalyst activator jacket vent (R-201B):
 - (i) 0.10 lb/hr and 0.44 ton per rolling 12-month period.
 - (c) catalyst filter vent (S-203A):
 - (i) 0.0015 lb/hr and 0.006 ton per rolling 12-month period.
 - (d) catalyst filter vent (S-203B):
 - (i) 0.0015 lb/hr and 0.006 ton per rolling 12-month period.
 - (e) extruder vent filter (4S-603):
 - (i) 0.015 lb/hr and 0.065 ton per rolling 12-month period.
 - (f) additive vent filter (4S-604):
 - (i) 0.04 lb/hr and 0.175 ton per rolling 12-month period.
 - (g) additive feeder vents (4Q-602A through F):

- (i) 0.001 lb/hr and 0.0044 ton per rolling 12-month period for each individual vent (6 individual vents).
- ii. use of fabric filtration control for achieving a maximum outlet concentration of 0.002 gr/dscf for PM₁₀/PM_{2.5} and lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5} for the following process vents:
 - (a) pellet conveying hopper vent (4V-607):
 - (i) 0.004 lb/hr and 0.0175 ton per rolling 12-month period.
 - (b) pellet hopper vent (4V-702):
 - (i) 0.06 lb/hr and 0.263 ton per rolling 12-month period.
 - (c) pellet & off-spec blender/silo vents (4V-701A through E) & (PE2-19):
 - (i) 0.036 lb/hr and 0.162 ton per rolling 12-month period for six vents combined.
- iii. PM₁₀/PM_{2.5} emissions for the pellet dryer fan vent (4C-603) shall not exceed a maximum outlet concentration of 0.002 gr/dscf and the following lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5}:
 - (i) 0.134 lb/hr & 0.587 ton per rolling 12-month period.
- *All emissions of particulate matter are PM₁₀/PM_{2.5} and the emission rates of PM₁₀ and PM_{2.5} are considered equivalent for permitting purposes.
- iv. visible particulate emissions from each process vent stack controlled with fabric filtration (as identified in b)(2)c.) shall not exceed five percent opacity, as a six-minute average.
- v. catalyst activation system vents associated with co-catalyst container changes shall be controlled by passing vent streams through a seal pot containing mineral oil resulting only in emissions of nitrogen gas used in co-catalyst transfer.
- vi. there shall be no visible emissions of fugitive particulate from the discharge of co-catalyst material to the atmospheric sand pit.
- d. BAT requirements for VOC and PM₁₀/PM_{2.5} emissions under ORC 3704.03(T) have been determined to be compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20. It should be noted that emissions of GHG are not subject to BAT under ORC 3704.03(T).
- e. BAT requirements under OAC rule 3745-31-05(A)(3) have been determined to be:

- i. for sulfur dioxide (SO₂) emissions - use of natural gas fuel in the furnaces in the catalyst activation section of the HPDE manufacturing process;
- ii. for CO and NOx – compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
- f. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- g. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to emissions of NO_x, CO, and SO₂ from this air contaminant source since the potential to emit is less than 10 tons/year (taking into account the federally enforceable BACT requirements when applicable).
- h. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- i. The following regulations establish requirements for component equipment leak control and repair for VOC, HAPs, and GHGs from the polyethylene manufacturing line:
 - i. for VOCs:
 - (a) OAC rule 3745-31-10 through 20;
 - (b) ORC 3704.03(T);
 - (c) OAC rule 3745-21-09(DD);
 - (d) 40 CFR Part 60, Subpart DDD;
 - ii. for HAPs:
 - (a) 40 CFR Part 63, Subpart SS; and
 - (b) 40 CFR Part 63, Subpart FFFF.
 - iii. for GHGs:
 - (a) OAC rule 3745-31-10 through 20.

Note: A separate emissions unit (P807) associated with fugitive leaks of VOC, HAP, VHAP/Benzene*, and GHGs from all component equipment at the facility subject to the leak control and repair regulations above has been established. For efficient permitting structure applicable requirements (limitations, operational restrictions, monitoring, record keeping, reporting, and testing) associated with equipment leak control and repair for VOC, HAP, VHAP/Benzene*, and GHGs are contained within the requirements of emissions unit P807.

*It should be noted HDPE manufacturing operations are not subject to regulations for VHAP/Benzene emissions under 40 CFR Part 61.

- j. Closed vent systems controlled with HP flare and thermal oxidizer control of LPSR condensate separator, and powder conveying package vent are utilized to meet the requirements of the following regulations:
 - i. for VOC:
 - (a) OAC rule 3745-31-10 through 3745-31-20;
 - (b) ORC 3704.03(T); and
 - (c) 40 CFR Part 60, Subpart DDD.
 - ii. for HAP:
 - (a) 40 CFR Part 63, Subpart SS; and
 - (b) 40 CFR Part 63, Subpart FFFF.

The thermal oxidizer(s) utilized for control and the closed vent system controlled with HP flare are permitted as separate and individual emissions units (emissions units P001, P002, and P003 respectively). For efficient permitting structure, the applicable operational restrictions, monitoring, record keeping, reporting, and testing associated with thermal oxidizer control and the closed vent systems with flare control are contained with the requirements of emissions units P001, P002, and P003.

- k. This emissions unit is not subject to OAC rule 3745-21-07 in accordance with OAC rule 3745-21-07(M)(3)(c).
- l. This emissions unit is not subject to OAC rule 3745-21-13 in accordance with OAC rule 3745-21-13(A)(1).
- m. The emission limitation specified by this rule is less stringent than BACT requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
- n. Exempt pursuant to OAC rule 3745-18-06(A) since only natural gas fuel is burned in this emissions unit.
- o. Exempt pursuant to OAC rule 3745-110-03(K)(16).

c) Operational Restrictions

- (1) The permittee shall burn only natural gas fuel with a maximum sulfur content not to exceed 0.005 gr/dscf in this emissions unit.
- (2) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
- (3) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).

- (4) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).
 - (5) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 63.7575).
- d) Monitoring and/or Recordkeeping Requirements
- (1) For each day during which the permittee burns a fuel other than natural gas fuel with a maximum sulfur content of 0.005 gr/dscf, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.
 - (2) The permittee shall determine the VOC content in the polyethylene resin exiting the extruder at least once per week using Test Method 24 as set forth in "Appendix on Test Methods" in 40 CFR, Part 60 ("Standards of Performance for New Stationary Sources") or other method as approved by Ohio EPA.
 - (3) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks for this emissions unit identified in b)(2)c. The presence or absence of any visible emissions for each individual stack shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emissions incident; and
 - e. any corrective actions taken to minimize or eliminate the visible emissions.If visible emissions are present, a visible emissions incident has occurred. The observer does not have to document the exact start and end times for the visible emissions incident under item (d) above or continue the daily check until the incident has ended. The observer may indicate that the visible emissions incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions or specify the corrective actions that were taken to eliminate abnormal visible emissions.
 - (4) The permittee shall perform daily checks, when the emissions unit is in operation, for any visible emissions of fugitive particulate from the discharge of co-catalyst material to the atmospheric sand pit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;

- b. the total duration of any visible emissions incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
- (5) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
 - (6) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
 - (7) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).
 - (8) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 63.7575).
- e) Reporting Requirements
- (1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
 - (2) The permittee shall submit quarterly deviation (excursion) reports that identify the results of any testing showing the residual VOC in the polyethylene resin exiting the extruder being greater than or equal to 80 ppmv.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.
 - (3) The permittee shall submit semiannual written reports that identify:
 - a. all days during which any visible particulate emissions were observed from the stacks for this emissions unit identified in b)(2)c.;
 - b. all days during which any visible emissions of fugitive particulate were observed from the discharge of co-catalyst material to the atmospheric sand pit; and
 - c. any corrective actions taken to eliminate the visible particulate emissions.
- These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.
- (4) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
 - (5) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
 - (6) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).
 - (7) See 40 CFR Part 63, Subpart DDDDD (40 CFR 63.7480 – 63.7575).

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitations:

- i. Combust the emissions in a flare that meets the requirements of §60.18. The flare requirements of §60.18 are consistent with a destruction efficiency of 98% for VOC emissions required in b)(2)b.;
- ii. Reduce emissions from LPSR condensate separator, and powder conveying package vent with a thermal oxidizer achieving a VOC destruction efficiency of 99.5%;
- iii. Reduce emissions of organic HAP by 98 weight-percent; or reduce organic HAP or TOC to a concentration of 20 parts per million by volume; whichever is less stringent.

Applicable Compliance Method:

Refer to emissions unit P001, P002, P003, and P807 for applicable compliance methods for the above emission limitations.

b. Emissions Limitations:

- i. Combustion emissions associated with the jackets of two catalyst activator furnaces:

(a) for NO_x emissions:

- (i) 0.098 lb/MMBtu;
- (ii) 0.51 lb/hr (for each individual furnace); and
- (iii) 4.47 tons per rolling 12-month period for the two activator furnaces combined.

(b) for CO emissions:

- (i) 0.082 lb/MMBtu;
- (ii) 0.43 lb/hr (for each individual furnace); and
- (iii) 3.74 tons per rolling 12-month period for the two activator furnaces combined.

(c) for VOC emissions:

- (i) 0.0054 lb/MMBtu;

- (ii) 0.03 lb/hr (for each individual furnace); and
 - (iii) 0.25 ton per rolling 12-month period for two activator furnaces combined.
- (d) for emissions of PM₁₀ and PM_{2.5}:
- (i) 0.0075 lb/MMBtu;
 - (ii) 0.04 lb/hr (for each individual furnace); and
 - (iii) 0.34 ton per rolling 12-month period for two activator furnaces combined.
- (e) for CO₂e emissions:
- (i) 117 lbs/MMBtu; and
 - (ii) 5,335 tons per rolling 12-month period for two activator furnaces combined.

Applicable Compliance Method:

The lb/MMBtu, lb/hr, and tons/rolling 12-month period allowable emission limitations were established based on the potential to emit* for the combustion emissions from the catalyst activator furnace jackets. Therefore, no record keeping, deviation reporting, or compliance method calculations are required to demonstrate compliance.

*The potential to emit (PTE) for combustion emissions was determined as follows:

The PTE in lb/MMBtu was determined using AP-42 emission factors from Tables 1.4-1 and 1.4-2 (revised 7/98);

The PTE in lb/hr was determined by multiplying the potential emissions in lb/MMBtu by a maximum heat input of 5.2 MMBtu/hr for each individual furnace;

The PTE in tons per rolling 12-month period was determined by multiplying the combined potential lb/hr emissions from both furnaces by a maximum operating schedule of 8,760 hours per year and dividing by 2000 lbs/ton.

c. Emissions Limitations:

- i. PM₁₀/PM_{2.5} emission limitations of 0.005 gr/dscf and lb/hr and tons per rolling 12-month period limitations indicated for the following process vents:
 - (a) catalyst activator jacket vent (R-201A):

- (i) 0.10 lb/hr and 0.44 ton per rolling 12-month period.
 - (b) catalyst activator jacket vent (R-201B):
 - (i) 0.10 lb/hr and 0.44 ton per rolling 12-month period.
 - (c) catalyst filter vent (S-203A):
 - (i) 0.0015 lb/hr and 0.006 ton per rolling 12-month period.
 - (d) catalyst filter vent (S-203B):
 - (i) 0.0015 lb/hr and 0.006 ton per rolling 12-month period.
 - (e) extruder vent filter (4S-603):
 - (i) 0.015 lb/hr and 0.065 ton per rolling 12-month period.
 - (f) additive vent filter (4S-604):
 - (i) 0.04 lb/hr and 0.175 ton per rolling 12-month period.
 - (g) additive feeder vent (4Q-602A through F):
 - (i) 0.001 lb/hr (for each individual vent) and 0.0044 ton per rolling 12-month period (for each individual vent).
- ii. PM₁₀/PM_{2.5} emission limitations of 0.002 gr/dscf and lb/hr and tons per rolling 12-month period limitations indicated for the following process vents:
- (a) pellet dryer fan vent (4C-603):
 - (i) 0.134 lb/hr and 0.587 ton per rolling 12-month period.
 - (b) pellet conveying hopper vent (4V-607):
 - (i) 0.004 lb/hr and 0.0175 ton per rolling 12-month period.
 - (c) pellet hopper vent (4V-702):
 - (i) 0.06 lb/hr and 0.263 ton per rolling 12-month period.
 - (d) pellet & off-spec blender/silo vents (4V-701A through E) & (PE2-19):
 - (i) 0.036 lb/hr and 0.162 ton per rolling 12-month period for six vents combined.

Applicable Compliance Method:

The 0.005 gr/dscf (for sources upstream of pellet dryer) and 0.002 gr/dscf (for pellet dryer and sources downstream of the pellet dryer) were established in accordance with BACT requirements as maximum outlet concentration standards.

The lb/hr limitations were established by multiplying the emission limitation of 0.005 gr/dscf or 0.002 gr/dscf by the following maximum volumetric air flow rates (cfm) and multiplying by lb/7,000 gr and 60 min/hr:

catalyst activator jacket vent (R-201A) – 2,333 cfm

catalyst activator jacket vent (R-201B) – 2,333 cfm

catalyst activator filter vent (S-203A) – 35 cfm

catalyst activator filter vent (S-203B) – 35 cfm

extruder vent filter (4S-603) – 350 cfm

additive vent filter (4S-604) – 933 cfm

additive feeder vent (4Q-602A through F) – 23 cfm (for each individual vent)

pellet dryer fan vent (4C-603) – 7,817 cfm

pellet conveying hopper vent (4V-607) – 233 cfm

pellet hopper vent (4V-702) – 3,500 cfm

pellet & off-spec blender/silo vents (4V-701A through E) & (PE2-19) – 1,075 cfm (for each individual vent)

If required, the permittee shall demonstrate compliance with the gr/dscf and lb/hr limitations in accordance with Methods 1-4 of 40 CFR Part 60, Appendix A and Methods 201, 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The tons per rolling 12-month period limitations were established by multiplying the lb/hr limitations by a maximum operating schedule of 8,760 hours per year and dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr limitations, compliance with the rolling 12-month limitations shall also be demonstrated.

d. Emissions Limitations:

Visible particulate emissions from each individual catalyst activator furnace stack shall not exceed five percent opacity, as a six-minute average.

Visible particulate emissions from each process vent stack controlled with fabric filtration (as identified in b)(2)c.) shall not exceed five percent opacity, as a six-minute average.

Applicable Compliance Method:

If required, compliance shall be demonstrated using Test Method 9 as set forth in "Appendix on Test Methods" in 40 CFR, Part 60 ("Standards of Performance for New Stationary Sources").

e. Emissions Limitation:

The combined VOC emissions for all HDPE manufacturing process vents without VOC control (e.g. not vented to flare or TO) shall not exceed 28.00 tons per rolling 12-month period.

Applicable Compliance Method:

The annual limitation represents the potential to emit based on a maximum production capacity of 350,000 metric tons of polyethylene resin pellets and a residual VOC in extruded pellets of less than 80 ppmv. Therefore, provided compliance is shown with the residual VOC requirement of less than 80 ppmv, compliance with the annual emission limitation shall also be demonstrated.

f. Emissions Limitation:

There shall be no visible emissions of fugitive particulate from the discharge of co-catalyst material to the atmospheric sand pit.

Applicable Compliance Method:

If required, compliance with the visible emissions limitation for the fugitive dust identified in this permit shall be determined in accordance with U.S. EPA Method 22.

g) Miscellaneous Requirements

- (1) None.

6. P804, Linear Low/High-Density Polyethylene Manufacturing Unit #3

Operations, Property and/or Equipment Description:

450 KTA linear low-density polyethylene (LLDPE)/high density polyethylene (HDPE) manufacturing process; includes purification (ethylene & raw material), catalyst system, reactor system, resin degassing and vent recovery, seed bed & granular storage system, and additive handling and pelletizing.

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:
 - (1) None.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	Best Available Control Technology (BACT) for volatile organic compounds (VOC), particulate matter 10 microns or less in size (PM_{10}), particulate matter 2.5 microns or less in size ($PM_{2.5}$), and carbon dioxide equivalents (CO_2e) See b)(2)a. and b)(2)b.
b.	ORC 3704.03(T)	See b)(2)c.
c.	OAC rule 3745-21-09(DD)	See b)(2)f. and b)(2)g.
d.	40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566) [In accordance with 40 CFR 60.560, this emissions unit involves equipment in the manufacturing of polyethylene subject to the requirements specified in this section.]	Combust continuous/intermittent vent emissions in a flare that meets the requirements of §60.18 [40 CFR 60.562-1(a)(1)(i)(C)] Detection and repair for equipment leaks of VOC [§60.562-2] See b)(2)f. and b)(2)g..
e.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.19)	General Provisions [§60.1 through §60.19]
f.	40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999)	Closed vent system, fuel gas system, and control equipment requirements [40 CFR 63.982 through 63.988]

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	[In accordance with 40 CFR 63.981, this emissions unit involves the control of air emissions from equipment leaks subject (by reference of other Part 63 Subparts) to the requirements specified in this section]	See b)(2)f. and b)(2)g.
g.	<p>40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550)</p> <p>[In accordance with 40 CFR 63.2435, this emissions unit is a miscellaneous organic chemical manufacturing process unit (MCPU) subject to the requirements specified in this section]</p>	<p>Reduce total organic HAP emissions from process vents by \geq 98 % by weight by venting through closed vent system(s) to any combination of control devices or venting to a flare for process vents [§63.2455 & §63.2460];</p> <p>Comply with the requirements of 40 CFR Part 63, Subpart UU for equipment leaks [§63.2480]</p> <p>Comply with the requirements of 40 CFR Part 63, Subpart G for process wastewater and liquid streams in open systems [§63.2485]</p> <p>Comply with the requirements of 40 CFR Part 63, Subpart F for heat exchange systems [§63.2490]</p> <p>See b)(2)f. and b)(2)g.</p>
h.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	<p>General Provisions [§63.1 through §63.16]</p> <p>Table 12 to Subpart FFFF of 40 CFR Part 63 – Applicability of General Provisions to Subpart FFFF shows which parts of the General Provisions in 40 CFR 63.1-16 apply to MCPU operations.</p> <p>Table 10 to 40 CFR Part 63, Subpart DDDDD – Applicability of General Provisions (Subpart A) to Subpart DDDDD shows which parts of the General Provisions in 40 CFR Part 63.1 – 63.16 apply.</p>
i.	OAC rule 3745-21-07	See b)(2)h.
j.	OAC rule 3745-21-13	See b)(2)i.
k.	OAC rule 3745-17-11(B)	See b)(2)j.
l.	OAC rule 3745-17-07(A)	See b)(2)j.

The LLDPE/HDPE manufacturing units #3 & #4 (emissions unit P804 & P805) share seed bed operations (filter vents Y-5651 through 5655). Limitations and requirements for the shared seed bed operations are contained within the terms and conditions below and are also contained in the terms and conditions of emissions unit P805.

(2) Additional Terms and Conditions

- a. BACT requirements for LLDPE/HDPE manufacturing process for VOC emissions has been determined to be the following:
 - i. use of thermal oxidizer (TO) achieving a destruction efficiency of 99.5% for VOC emissions (continuous) from the following:
 - (a) analyzer vents;
 - (b) degassing column vents;
 - (c) ethylene purification;
 - (d) low product purge bin vent filter; and
 - (e) high pressure accumulator vent
 - ii. use of closed vent system controlled with flare (high pressure (HP) and/or low pressure (LP)) achieving a destruction efficiency of 98% for VOC emissions (intermittent/emergency) from the following:
 - (a) butene dryer regen vent;
 - (b) hexene dryer regen vent;
 - (c) ICA dryer regen vent;
 - (d) ethylene deoxo regen vent;
 - (e) ethylene dryers regen vent;
 - (f) ethylene systems shutdown;
 - (g) non-emergency reactor vents; and
 - (h) product purge bin vent filter.
 - iii. pressure safety valve (PSV) leaks/releases from the following:
 - (i) raw materials supply pressure PSVs;
 - (ii) purification PSVs;
 - (iii) reaction PSVs;
 - (iv) resin degassing PSVs; and
 - (v) vent recovery PSVs.

- iii. residual VOC in the polyethylene resin exiting the granular resin surge hopper shall be less than 80 ppmv;
 - iv. The combined VOC emissions for all LLDPE/HDPE manufacturing process vents without VOC control (e.g. not vented to flare or TO) shall not exceed 36.00 tons per rolling 12-month period;
 - v. implementation of facility specific program reducing fugitive component equipment leaks including applicable component equipment in the polyethylene manufacturing line (see C.12.b)(2)b. and c.); and
 - vi. implementation of a program to minimize flaring.
- b. BACT requirements for LLDPE/HDPE manufacturing process for PM₁₀/PM_{2.5}* emissions has been determined to be the following:
- i. use of fabric filtration control for achieving a maximum outlet concentration of 0.005 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5} for the following process vents:
 - (a) catalyst vent filter (Y-4901):
 - (i) 0.035 lb/hr and 0.153 ton per rolling 12-month period.
 - (b) receiver bin filter vent (Y-5657) & seed bed filter vents (Y-5651 through 5655):
 - (i) 0.08 lb/hr and 0.35 ton per rolling 12-month period.
 - ii. use of fabric filtration control for achieving a maximum outlet concentration of 0.002 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5} for the following process vents:
 - (a) granular resin surge hopper vent filter (D-6210):
 - (i) 0.042 lb/hr and 0.184 ton per rolling 12-month period.
 - (b) bag dump stations/dump hoppers vent filter (Y-6231 through 6235):
 - (i) 0.0515 lb/hr and 0.226 ton per rolling 12-month period.
 - (c) talc surge bin filter (Y-6251):
 - (i) 0.012 lb/hr and 0.053 ton per rolling 12-month period.
 - (d) mixer vent filter (Y-6260):
 - (i) 0.009 lb/hr and 0.039 ton per rolling 12-month period.
 - (e) pellet conveying hopper (PE3-07):

- (i) 0.004 lb/hr and 0.018 ton per rolling 12-month period.
- (f) pellet hopper (PE3-08):
 - (i) 0.06 lb/hr and 0.26 ton per rolling 12-month period.
- (g) pellet blending/off-spec blending silos (PE3-09 through PE3-15):
 - (i) 0.048 lb/hr and 0.208 ton per rolling 12-month period for all vents combined.
- iii. PM₁₀/PM_{2.5} emissions for the pellet dryer vent (Y-7010) shall not exceed a maximum outlet concentration of 0.002 gr/dscf and the following lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5}:
 - (a) 0.05 lb/hr and 0.11 ton per rolling 12-month period.

*All emissions of particulate matter are PM₁₀/PM_{2.5} and the emission rates of PM₁₀ and PM_{2.5} are considered equivalent for permitting purposes.

- iv. visible particulate emissions from each process vent stack identified in b)(2)b. shall not exceed five percent opacity, as a six-minute average.
- c. BAT requirements for VOC and PM₁₀/PM_{2.5} emissions under ORC 3704.03(T) have been determined to be compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20. It should be noted that emissions of GHG are not subject to BAT pursuant to OAC 3745-34-31(E)(8).
- d. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- e. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- f. The following regulations establish requirements for component equipment leak control and repair for VOC, HAPs, and greenhouse gases (GHGs) from the polyethylene manufacturing line:
 - i. for VOCs:
 - (a) OAC rule 3745-31-10 through 20;
 - (b) ORC 3704.03(T);
 - (c) OAC rule 3745-21-09(DD); and
 - (d) 40 CFR Part 60, Subpart DDD;

- ii. for HAPs:
 - (a) 40 CFR Part 63, Subpart SS; and
 - (b) 40 CFR Part 63, Subpart FFFF;
- iii. for GHGs:
 - (a) OAC rule 3745-31-10 through 20.

Note: A separate emissions unit (P807) associated with fugitive leaks of VOC, HAP, VHAP/Benzene*, and GHGs from all component equipment at the facility subject to the leak control and repair regulations above has been established. For efficient permitting structure applicable requirements (limitations, operational restrictions, monitoring, record keeping, reporting, and testing) associated with equipment leak control and repair for VOC, HAP, VHAP/Benzene*, and GHGs are contained within the requirements of emissions unit P807.

*It should be noted LLDPE/HDPE manufacturing operations are not subject to regulations for VHAP/Benzene emissions under 40 CFR Part 61.

- g. Closed vent systems controlled with HP flare, LP flare, and thermal oxidizer control of analyzer vents, degassing column vents, ethylene purification, low product purge bin vent filter, and high-pressure accumulator vent are utilized to meet the requirements of the following regulations:

- i. for VOC:
 - (a) OAC rule 3745-31-10 through 3745-31-20;
 - (b) ORC 3704.03(T); and
 - (c) 40 CFR Part 60, Subpart DDD.
- ii. for HAP:
 - (a) 40 CFR Part 63, Subpart SS; and
 - (b) 40 CFR Part 63, Subpart FFFF.

The thermal oxidizers utilized for control and the closed vent system controlled with HP flare and LP flare are permitted as separate and individual emissions units (emissions units P001, P002, P003, and P004, respectively). For efficient permitting structure, the applicable operational restrictions, monitoring, record keeping, reporting, and testing associated with thermal oxidizer control and the closed vent systems with flare control are contained with the requirements of emissions units P001, P002, P003, and P004.

- h. This emissions unit is not subject to OAC rule 3745-21-07 in accordance with OAC rule 3745-21-07(M)(3)(c).

- i. This emissions unit is not subject to OAC rule 3745-21-13 in accordance with OAC rule 3745-21-13(A)(1).
- j. The emission limitation specified by this rule is less stringent than BACT requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.

c) Operational Restrictions

- (1) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
- (2) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (3) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall determine the VOC content in the polyethylene resin exiting the granular resin surge hopper at least once per week using Test Method 24 as set forth in "Appendix on Test Methods" in 40 CFR, Part 60 ("Standards of Performance for New Stationary Sources") or other method as approved by Ohio EPA.
- (2) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks for this emissions unit identified in b)(2)b. The presence or absence of any visible emissions for each individual stack shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emissions incident; and
 - e. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emissions incident has occurred. The observer does not have to document the exact start and end times for the visible emissions incident under item (d) above or continue the daily check until the incident has ended. The observer may indicate that the visible emissions incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions or specify the corrective actions that were taken to eliminate abnormal visible emissions.

- (3) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).

- (4) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (5) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

e) Reporting Requirements

- (1) The permittee shall submit quarterly deviation (excursion) reports that identify the results of any testing showing the residual VOC in the polyethylene resin exiting the extruder being greater than or equal to 80 ppmv.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (2) The permittee shall submit semiannual written reports that identify:
 - a. all days during which any visible particulate emissions were observed from the stacks for this emissions unit identified in b)(2)b.; and
 - b. any corrective actions taken to eliminate the visible particulate emissions.

These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

- (3) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
- (4) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (5) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

f) Testing Requirements

- (1) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:
 - a. The emission testing shall be conducted within 180 days after initial startup of the emissions unit;
 - b. The emission testing shall be conducted to demonstrate compliance with:
 - i. the allowable emissions of 0.005 gr/dscf and 0.035 lb/hr for PM₁₀/PM_{2.5} from the catalyst vent filter (Y-4901);
 - ii. the opacity limitation of five percent, as a six-minute average from the catalyst vent (Y-4901).
 - c. The following test methods shall be employed to demonstrate compliance with the allowable emission limitations:
 - i. For PM₁₀/PM_{2.5} – Methods 1-4 of 40 CFR Part 60, Appendix A, and Methods 201, 201A, and 202 of 40 CFR Part 51, Appendix M and

- ii. For opacity – Method 9 of 40 CFR, Part 60, Appendix A. Opacity readings shall be taken during the sampling runs for testing of the allowable emission limitations in f)(1)b.i. and f)(1)b.ii.

Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

- d. The test(s) shall be conducted under those representative conditions that challenge to the fullest extent possible a facility's ability to meet the applicable emissions limits and/or control requirements, unless otherwise specified or approved by the appropriate Ohio EPA District Office or local air agency. Although this generally consists of operating the emissions unit at its maximum material input/production rates and results in the highest emission rate of the tested pollutant, there may be circumstances where a lower emissions loading is deemed the most challenging control scenario. Failure to test under these conditions is justification for not accepting the test results as a demonstration of compliance.
- e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the appropriate Ohio EPA District Office or local air agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA District Office's or local air agency's refusal to accept the results of the emission test(s).
- f. Personnel from the appropriate Ohio EPA District Office or local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
- g. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the appropriate Ohio EPA District Office or local air agency.

- (2) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

- a. Emissions Limitations:
 - i. Combust the emissions in a flare that meets the requirements of §60.18. The flare requirements of §60.18 are consistent with a destruction efficiency of 98% for VOC emissions required in b)(2)b.;

- ii. Reduce emissions from analyzer vents, degassing column vents, ethylene purification, low product purge bin vent filter, and high-pressure accumulator vent with a thermal oxidizer achieving a VOC destruction efficiency of 99.5%;
- iii. Reduce emissions of organic HAP by 98 weight-percent; or reduce organic HAP or TOC to a concentration of 20 parts per million by volume; whichever is less stringent.

Applicable Compliance Method:

Refer to emissions unit P001, P002, P003, P004 and P807 for applicable compliance methods for the above emission limitations.

b. Emissions Limitations:

- i. PM₁₀/PM_{2.5} emission limitations of 0.005 gr/dscf and lb/hr and tons per rolling 12-month period limitations indicated for the following process vents:

- (a) catalyst vent filter (Y-4901):
 - (i) 0.035 lb/hr and 0.153 ton per rolling 12-month period.
 - (b) receiver bin filter vent* (Y-5657) & seed bed filter vents* (Y-5651 through 5655):
 - (i) 0.08 lb/hr and 0.35 ton per rolling 12-month period.

*Based on process design, there will only be air flow in one of the 6 filter vents at any time.

- ii. PM₁₀/PM_{2.5} emission limitations of 0.002 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5} for the following process vents:

- (a) granular resin surge hopper/vent filter (D-6210):
 - (i) 0.042 lb/hr and 0.184 ton per rolling 12-month period.
 - (b) bag dump stations/dump hoppers vent filters** (Y-6231 through 6235):
 - (i) 0.0515 lb/hr and 0.226 ton per rolling 12-month period.

**Based on process design, there will only be air flow in one of the 5 filter vents at any time.

- (c) talc surge bin filter (Y-6251):
 - (i) 0.012 lb/hr and 0.053 ton per rolling 12-month period.

- (d) mixer vent filter (Y-6260):
 - (i) 0.009 lb/hr and 0.039 ton per rolling 12-month period.
 - (e) pellet conveying hopper (PE3-07):
 - (i) 0.004 lb/hr and 0.018 ton per rolling 12-month period.
 - (f) pellet hopper (PE3-08):
 - (i) 0.06 lb/hr and 0.26 ton per rolling 12-month period.
 - (g) pellet blending/off-spec blending silos*** (PE3-09 through PE3-15):
 - (i) 0.0048 lb/hr and 0.208 ton per rolling 12-month period for all vents combined.
- ***Based on process design, only 2 of the 7 silos will be in operation at any time.
- (h) pellet dryer vent (Y-7010):
 - (i) 0.05 lb/hr & 0.11 ton per rolling 12-month period.

Applicable Compliance Method:

The 0.005 gr/dscf (for sources upstream of the pellet dryer) and 0.002 gr/dscf (for pellet dryer and sources downstream of the pellet dryer) were established in accordance with BACT requirements as maximum outlet concentration standards.

The lb/hr limitations were established by multiplying the emission limitation of 0.005 gr/dscf or 0.002 gr/dscf by the following maximum volumetric air flow rates (cfm) and multiplying by lb/7,000 gr and 60 min/hr:

catalyst vent filter (Y-4901) – 5,600 cfm

receiver bin filter vent (Y-5657) & seed bed filter vents (Y-5651 through 5655) – 1,867 cfm (for an individual vent) granular resin surge hopper/vent filter (D-6210) – 2450 cfm

bag dump stations/dump hoppers vent filter (Y-6231 through 6235) – 6008 cfm (for an individual vent) talc surge bin filter (Y-6251) – 700 cfm

mixer vent filter (Y-6260) – 525 cfm

pellet conveying hopper (PE3-07) – 233 cfm

pellet hopper (PE3-08) – 3500 cfm

pellet blending/off-spec blending silos (PE3-09 through PE3-15) – 1,380 cfm (for an individual vent)

pellet dryer vent (Y-7010) – 583 cfm

If required, the permittee shall demonstrate compliance with the gr/dscf and lb/hr limitations in accordance with Methods 1-4 of 40 CFR Part 60, Appendix A and Methods 201, 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The tons per rolling 12-month period limitations were established by multiplying the lb/hr limitations by a maximum operating schedule of 100 hours per year for the catalyst vent filter and 8,760 hours per year for all other identified vents and dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr limitations, compliance with the rolling 12-month limitations shall also be demonstrated.

c. Emissions Limitations:

Visible particulate emissions from each process vent stack identified in b)(2)b. shall not exceed five percent opacity, as a six-minute average.

Applicable Compliance Method:

If required, compliance shall be demonstrated using Test Method 9 as set forth in "Appendix on Test Methods" in 40 CFR, Part 60 ("Standards of Performance for New Stationary Sources").

d. Emissions Limitation:

The combined VOC emissions for all LLDPE/HDPE manufacturing process vents without VOC control (e.g. not vented to flare or TO) shall not exceed 36.00 tons per rolling 12-month period.

Applicable Compliance Method:

The annual limitation represents the potential to emit based on a maximum production capacity of 450,000 metric tons of polyethylene resin pellets and a residual VOC in extruded pellets of less than 80 ppmv. Therefore, provided compliance is shown with the residual VOC requirement of less than 80 ppmv, compliance with the annual emission limitation shall also be demonstrated.

g) Miscellaneous Requirements

- (1) None.

7. P805, Linear Low/High-Density Polyethylene Manufacturing Unit #4

Operations, Property and/or Equipment Description:

450 KTA linear low-density polyethylene (LLDPE)/high density polyethylene (HDPE) manufacturing process; includes purification (ethylene & raw material), catalyst system, reactor system, resin degassing and vent recovery, seed bed & granular storage system, and additive handling and pelletizing.

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:
 - (1) None.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	Best Available Control Technology (BACT) for volatile organic compounds (VOC), particulate matter 10 microns or less in size (PM ₁₀), particulate matter 2.5 microns or less in size (PM _{2.5}), and carbon dioxide equivalents (CO ₂ e) See b)(2)a. and b)(2)b.
b.	ORC 3704.03(T)	See b)(2)c.
c.	OAC rule 3745-21-09(DD)	See b)(2)f. and b)(2)g.
d.	40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566) [In accordance with 40 CFR 60.560, this emissions unit involves equipment in the manufacturing of polyethylene subject to the requirements specified in this section.]	Combust continuous/intermittent vent emissions in a flare that meets the requirements of §60.18 [40 CFR 60.562-1(a)(1)(i)(C)] Detection and repair for equipment leaks of VOC [§60.562-2] See b)(2)f. and b)(2)g.
e.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.19)	General Provisions [§60.1 through §60.19]
f.	40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999)	Closed vent system, fuel gas system, and control equipment requirements [40 CFR 63.982 through 63.988]

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	[In accordance with 40 CFR 63.981, this emissions unit involves the control of air emissions from equipment leaks subject (by reference of other Part 63 Subparts) to the requirements specified in this section]	See b)(2)f. and b)(2)g.
g.	<p>40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550)</p> <p>[In accordance with 40 CFR 63.2435, this emissions unit is a miscellaneous organic chemical manufacturing process unit (MCPU) subject to the requirements specified in this section]</p>	<p>Reduce total organic HAP emissions from process vents by \geq 98 % by weight by venting through closed vent system(s) to any combination of control devices or venting to a flare for process vents [§63.2455 & §63.2460];</p> <p>Comply with the requirements of 40 CFR Part 63, Subpart UU for equipment leaks [§63.2480]</p> <p>Comply with the requirements of 40 CFR Part 63, Subpart G for process wastewater and liquid streams in open systems [§63.2485]</p> <p>Comply with the requirements of 40 CFR Part 63, Subpart F for heat exchange systems [§63.2490]</p> <p>See b)(2)f. and b)(2)g.</p>
h.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	<p>General Provisions [§63.1 through §63.16]</p> <p>Table 12 to Subpart FFFF of 40 CFR Part 63 – Applicability of General Provisions to Subpart FFFF shows which parts of the General Provisions in 40 CFR 63.1-16 apply to MCPU operations.</p> <p>Table 10 to 40 CFR Part 63, Subpart DDDDD – Applicability of General Provisions (Subpart A) to Subpart DDDDD shows which parts of the General Provisions in 40 CFR Part 63.1 – 63.16 apply.</p>
i.	OAC rule 3745-21-07	See b)(2)h.
j.	OAC rule 3745-21-13	See b)(2)i.
k.	OAC rule 3745-17-11(B)	See b)(2)j.
l.	OAC rule 3745-17-07(A)	See b)(2)j.

The LLDPE/HDPE manufacturing units #3 & #4 (emissions unit P804 & P805) share seed bed operations (filter vents Y-5651 through 5655). Limitations and requirements for the shared seed bed operations are contained within the terms and conditions below and are also contained in the terms and conditions of emissions unit P804.

(2) Additional Terms and Conditions

- a. BACT requirements for LLDPE/HDPE manufacturing process for VOC emissions has been determined to be the following:
 - i. use of thermal oxidizer (TO) achieving a destruction efficiency of 99.5% for VOC emissions (continuous) from the following:
 - (a) analyzer vents;
 - (b) degassing column vents;
 - (c) ethylene purification;
 - (d) low product purge bin vent filter; and
 - (e) high pressure accumulator vent
 - ii. use of closed vent system controlled with flare (high pressure (HP) and/or low pressure (LP)) achieving a destruction efficiency of 98% for VOC emissions (intermittent/emergency) from the following:
 - (a) butene dryer regen vent;
 - (b) hexene dryer regen vent;
 - (c) ICA dryer regen vent;
 - (d) ethylene deoxo regen vent;
 - (e) ethylene dryers regen vent;
 - (f) ethylene systems shutdown;
 - (g) non-emergency reactor vents; and
 - (h) product purge bin vent filter.
 - iii. pressure safety valve (PSV) leaks/releases from the following:
 - (i) raw materials supply pressure PSVs;
 - (ii) purification PSVs;
 - (iii) reaction PSVs;
 - (iv) resin degassing PSVs; and
 - (v) vent recovery PSVs.

- iii. residual VOC in the polyethylene resin exiting the granular resin surge hopper shall be less than 80 ppmv;
 - iv. The combined VOC emissions for all LLDPE/HDPE manufacturing process vents without VOC control (e.g. not vented to flare or TO) shall not exceed 36.00 tons per rolling 12-month period;
 - v. implementation of facility specific program reducing fugitive component equipment leaks including applicable component equipment in the polyethylene manufacturing line (see C.12.b)(2)b. and c.); and
 - vi. implementation of a program to minimize flaring.
- b. BACT requirements for LLDPE/HDPE manufacturing process for PM₁₀/PM_{2.5}* emissions has been determined to be the following:
- i. use of fabric filtration control for achieving a maximum outlet concentration of 0.005 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5} for the following process vents:
 - (a) catalyst vent filter (Y-4902):
 - (i) 0.35 lb/hr and 0.153 ton per rolling 12-month period.
 - (b) receiver bin filter vent (Y-5957) & seed bed filter vents (Y-5651 through 5655):
 - (i) 0.08 lb/hr and 0.35 ton per rolling 12-month period.
 - ii. use of fabric filtration control for achieving a maximum outlet concentration of 0.002 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5} for the following process vents:
 - (a) granular resin surge hopper/vent filter (D-6510):
 - (i) 0.042 lb/hr and 0.184 ton per rolling 12-month period.
 - (b) bag dump stations/dump hoppers vent filter (Y-6531 through 6535):
 - (i) 0.0515 lb/hr and 0.226 ton per rolling 12-month period.
 - (c) talc surge bin filter (Y-6551):
 - (i) 0.012 lb/hr and 0.053 ton per rolling 12-month period.
 - (d) mixer vent filter (Y-6560):
 - (i) 0.009 lb/hr and 0.039 ton per rolling 12-month period.
 - (e) pellet conveying hopper (PE4-07):

- (i) 0.004 lb/hr and 0.018 ton per rolling 12-month period.
- (f) pellet hopper (PE4-08):
 - (i) 0.06 lb/hr and 0.26 ton per rolling 12-month period.
- (g) pellet blending/off-spec blending silos (PE4-09 through PE4-15):
 - (i) 0.048 lb/hr and 0.208 ton per rolling 12-month period for all vents combined.
- iii. PM₁₀/PM_{2.5} emissions for the pellet dryer vent (Y-7310) shall not exceed a maximum outlet concentration of 0.002 gr/dscf and the following lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5}:
 - (a) 0.05 lb/hr and 0.11 ton per rolling 12-month period.

*All emissions of particulate matter are PM₁₀/PM_{2.5} and the emission rates of PM₁₀ and PM_{2.5} are considered equivalent for permitting purposes.

- iv. visible particulate emissions from each process vent stack identified in b)(2)b. shall not exceed five percent opacity, as a six-minute average.
- c. BAT requirements for VOC and PM₁₀/PM_{2.5} emissions under ORC 3704.03(T) have been determined to be compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20. It should be noted that emissions of GHG are not subject to BAT pursuant to OAC 3745-34-31(E)(8).
- d. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- e. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- f. The following regulations establish requirements for component equipment leak control and repair for VOC, HAPs, and greenhouse gases (GHGs) from the polyethylene manufacturing line:
 - i. for VOCs:
 - (a) OAC rule 3745-31-10 through 20;
 - (b) ORC 3704.03(T);
 - (c) OAC rule 3745-21-09(DD); and
 - (d) 40 CFR Part 60, Subpart DDD;

- ii. for HAPs:
 - (a) 40 CFR Part 63, Subpart SS; and
 - (b) 40 CFR Part 63, Subpart FFFF;
- iii. for GHGs:
 - (a) OAC rule 3745-31-10 through 20.

Note: A separate emissions unit (P807) associated with fugitive leaks of VOC, HAP, VHAP/Benzene*, and GHGs from all component equipment at the facility subject to the leak control and repair regulations above has been established. For efficient permitting structure applicable requirements (limitations, operational restrictions, monitoring, record keeping, reporting, and testing) associated with equipment leak control and repair for VOC, HAP, VHAP/Benzene*, and GHGs are contained within the requirements of emissions unit P807.

*It should be noted LLDPE/HDPE manufacturing operations are not subject to regulations for VHAP/Benzene emissions under 40 CFR Part 61.

- g. Closed vent systems controlled with HP flare, LP flare, and thermal oxidizer control of analyzer vents, degassing column vents, ethylene purification, low product purge bin vent filter, and high-pressure accumulator vent are utilized to meet the requirements of the following regulations:

- i. for VOC:
 - (a) OAC rule 3745-31-10 through 3745-31-20;
 - (b) ORC 3704.03(T); and
 - (c) 40 CFR Part 60, Subpart DDD.
- ii. for HAP:
 - (a) 40 CFR Part 63, Subpart SS; and
 - (b) 40 CFR Part 63, Subpart FFFF.

The thermal oxidizers utilized for control and the closed vent system controlled with HP flare and LP flare are permitted as separate and individual emissions units (emissions units P001, P002, P003, and P004, respectively). For efficient permitting structure, the applicable operational restrictions, monitoring, record keeping, reporting, and testing associated with thermal oxidizer control and the closed vent systems with flare control are contained with the requirements of emissions units P001, P002, P003, and P004.

- h. This emissions unit is not subject to OAC rule 3745-21-07 in accordance with OAC rule 3745-21-07(M)(3)(c).

- i. This emissions unit is not subject to OAC rule 3745-21-13 in accordance with OAC rule 3745-21-13(A)(1).
- j. The emission limitation specified by this rule is less stringent than BACT requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.

c) Operational Restrictions

- (1) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
- (2) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (3) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall determine the VOC content in the polyethylene resin exiting the granular resin surge hopper at least once per week using Test Method 24 as set forth in "Appendix on Test Methods" in 40 CFR, Part 60 ("Standards of Performance for New Stationary Sources") or other method as approved by Ohio EPA.
- (2) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks for this emissions unit identified in b)(2)b. The presence or absence of any visible emissions for each individual stack shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emissions incident; and
 - e. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emissions incident has occurred. The observer does not have to document the exact start and end times for the visible emissions incident under item (d) above or continue the daily check until the incident has ended. The observer may indicate that the visible emissions incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions or specify the corrective actions that were taken to eliminate abnormal visible emissions.

- (3) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).

- (4) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (5) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

e) Reporting Requirements

- (1) The permittee shall submit quarterly deviation (excursion) reports that identify the results of any testing showing the residual VOC in the polyethylene resin exiting the extruder being greater than or equal to 80 ppmv.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (2) The permittee shall submit semiannual written reports that identify:
 - a. all days during which any visible particulate emissions were observed from the stacks for this emissions unit identified in b)(2)b.; and
 - b. any corrective actions taken to eliminate the visible particulate emissions.

These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

- (3) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
- (4) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (5) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

- a. Emissions Limitations:
 - i. Combust the emissions in a flare that meets the requirements of §60.18. The flare requirements of §60.18 are consistent with a destruction efficiency of 98% for VOC emissions required in b)(2)b.;
 - ii. Reduce emissions from analyzer vents, degassing column vents, ethylene purification, low product purge bin vent filter, and high-pressure accumulator vent with a thermal oxidizer achieving a VOC destruction efficiency of 99.5%;
 - iii. Reduce emissions of organic HAP by 98 weight-percent; or reduce organic HAP or TOC to a concentration of 20 parts per million by volume; whichever is less stringent.

Applicable Compliance Method:

Refer to emissions unit P001, P002, P003, P004 and P807 for applicable compliance methods for the above emission limitations.

b. Emissions Limitations:

i. PM₁₀/PM_{2.5} emission limitations of 0.005 gr/dscf and lb/hr and tons per rolling 12-month period limitations indicated for the following process vents:

- (a) catalyst vent filter (Y-4902):
 - (i) 0.035 lb/hr and 0.153 ton per rolling 12-month period.
- (b) receiver bin filter vent* (Y-5957) & seed bed filter vents* (Y-5651 through 5655):
 - (i) 0.08 lb/hr and 0.35 ton per rolling 12-month period.

*Based on process design, there will only be air flow in one of the 6 filter vents at any time.

ii. PM₁₀/PM_{2.5} emission limitations of 0.002 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations for PM₁₀/PM_{2.5} for the following process vents:

- (a) granular resin surge hopper/vent filter (D-6510):
 - (i) 0.042 lb/hr and 0.184 ton per rolling 12-month period.
- (b) bag dump stations/dump hoppers vent filters** (Y-6531 through 6535):
 - (i) 0.0515 lb/hr and 0.226 ton per rolling 12-month period.

**Based on process design, there will only be air flow in one of the 5 filter vents at any time.

- (c) talc surge bin filter (Y-6551):
 - (i) 0.012 lb/hr and 0.053 ton per rolling 12-month period.
- (d) mixer vent filter (Y-6560):
 - (i) 0.009 lb/hr and 0.039 ton per rolling 12-month period.
- (e) pellet conveying hopper (PE4-07):
 - (i) 0.004 lb/hr and 0.018 ton per rolling 12-month period.

- (f) pellet hopper (PE4-08):
 - (i) 0.06 lb/hr and 0.26 ton per rolling 12-month period.
- (g) pellet blending/off-spec blending silos*** (PE4-09 through PE4-15):
 - (i) 0.048 lb/hr and 0.208 ton per rolling 12-month period for all vents combined.

***Based on process design, only 2 of the 7 silos will be in operation at any time.

- (h) pellet dryer vent (Y-7310):
 - (i) 0.05 lb/hr & 0.11 ton per rolling 12-month period.

Applicable Compliance Method:

The 0.005 gr/dscf (for sources upstream of the pellet dryer) and 0.002 gr/dscf (for pellet dryer and sources downstream of pellet dryer) were established in accordance with BACT requirements as the maximum outlet concentration standard for the application of fabric filtration control.

The lb/hr limitations were established by multiplying the emission limitation of 0.005 gr/dscf or 0.002 gr/dscf by the following maximum volumetric air flow rates (cfm) and multiplying by lb/7,000 gr and 60 min/hr:

catalyst vent filter (Y-4902) – 5,600 cfm

receiver bin filter vent (Y-5957) & seed bed filter vents (Y-5651 through 5655) – 1,867 cfm (for an individual vent)

granular resin surge hopper/vent filter (D-6510) – 2450 cfm

bag dump stations/dump hoppers vent filter (Y-6531 through 6535) – 6008 cfm (for an individual vent)

talc surge bin filter (Y-6551) – 700 cfm

mixer vent filter (Y-6560) – 525 cfm

pellet conveying hopper (PE4-07) – 233 cfm

pellet hopper (PE4-08) – 3500 cfm

pellet blending/off-spec blending silos (PE4-09 through PE4-15) – 1,380 cfm (for an individual vent)

pellet dryer vent (Y-7310) – 583 cfm

If required, the permittee shall demonstrate compliance with the gr/dscf and lb/hr limitations in accordance with Methods 1-4 of 40 CFR Part 60, Appendix A and Methods 201, 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The tons per rolling 12-month period limitations were established by multiplying the lb/hr limitations by a maximum operating schedule of 100 hours per year for the catalyst vent filter and 8,760 hours per year for all other identified vents and dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr limitations, compliance with the rolling 12-month limitations shall also be demonstrated.

c. Emissions Limitations:

Visible particulate emissions from each process vent stack identified in b)(2)b. shall not exceed five percent opacity, as a six-minute average.

Applicable Compliance Method:

If required, compliance shall be demonstrated using Test Method 9 as set forth in "Appendix on Test Methods" in 40 CFR, Part 60 ("Standards of Performance for New Stationary Sources").

d. Emissions Limitation:

The combined VOC emissions for all LLDPE/HDPE manufacturing process vents without VOC control (e.g. not vented to flare or TO) shall not exceed 36.00 tons per rolling 12-month period.

Applicable Compliance Method:

The annual limitation represents the potential to emit based on a maximum production capacity of 450,000 metric tons of polyethylene resin pellets and a residual VOC in extruded pellets of less than 80 ppmv. Therefore, provided compliance is shown with the residual VOC requirement of less than 80 ppmv, compliance with the annual emission limitation shall also be demonstrated.

g) Miscellaneous Requirements

- (1) None.

8. Emissions Unit Group – OSBL Thermal Oxidizers: P001 and P002

EU ID	Operations, Property and/or Equipment Description
P001	OSBL Thermal Oxidizer 1 (B-5002A); 6.2 MMBtu/hr thermal oxidizer
P002	OSBL Thermal Oxidizer 2 (B-5002B); 6.2 MMBtu/hr thermal oxidizer

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)c., b)(2)e. and b)(2)f.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	Best Available Control Technology (BACT) for volatile organic compounds (VOC); particulate matter 10 microns or less in size (PM_{10}) and particulate matter 2.5 microns or less in size ($PM_{2.5}$), carbon monoxide (CO), nitrogen oxides (NO_x), and carbon dioxide equivalents (CO_2e). See b)(2)b.
b.	OAC rule 3745-31-05(A)(3) June 30, 2008	See b)(2)c. and b)(2)d.
c.	OAC rule 3745-31-05(A)(3)(a)(ii) June 30, 2008	See b)(2)e. and b)(2)f.
d.	40 CFR Part 60, Subpart Kb (40 CFR Part 60.110b – 60.117b) [This emissions unit is used to meet the control requirements specified in this section]	See b)(2)g.
e.	40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566) [This emissions unit is used to meet the control requirements specified in this section]	Control device monitoring, record keeping, and reporting [40 CFR 60.562-1, 60.563 through 60.565] See c)(1), d)(4) and e)(2).
f.	40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668)	Control device monitoring, record keeping, reporting, and testing [40 CFR 60.660 through 60.668]

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	[This emissions unit is used to meet the control requirements specified in this section]	See c)(2), d)(5), and e)(3).
g.	40 CFR Part 60, Subpart RRR (40 CFR 60.700 – 60.708) [This emissions unit is used to meet the control requirements specified in this section]	Control device monitoring, record keeping, reporting, and testing [40 CFR 60.700 through 60.708] See c)(3), d)(6) and e)(4).
h.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.19)	Control device and work practice requirements [§60.18] All of the General Provisions of 40 CFR Part 60, Subpart A are applicable except for the following: §60.7(c) does not apply to 40 CFR Subpart NNN [§60.665(k)]; and §60.7(c) does not apply to 40 CFR Subpart RRR [§60.705(k)]
i.	40 CFR Part 63, Subpart G (40 CFR 63.110 – 63.153) [This emissions unit is used to meet the control requirements specified in this section]	Combustion device requirements [40 CFR 63.110 – 63.153] See c)(4), d)(7) and e)(5).
j.	40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999) This emissions unit is used to meet the control requirements specified in 40 CFR Part 63, Subpart YY and 40 CFR Part 63, Subpart FFFF and is referenced for use by the above subparts]	Control device requirements [40 CFR 63.980 – 63.999] See c)(5), d)(8) and e)(6).
k.	40 CFR Part 63, Subpart YY (40 CFR 63.1100 – 63.1114) [This emissions unit is used to meet the control requirements specified in this section]	Control device requirements [40 CFR 63.1100 – 63.1114] See c)(6), d)(9) and e)(7).
l.	40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550) [This emissions unit is used to meet the control requirements specified in this section]	Requirements for control devices [40 CFR 63.2430 – 63.2550] See c)(7), d)(10) and e)(8).

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	this section]	
m.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	Control device and work practice requirements [§63.11]
n.	OAC rule 3745-17-11(B)	See b)(2)h.
o.	OAC rule 3745-17-07(A)	See b)(2)i.

(2) Additional Terms and Conditions

- a. Thermal oxidizer control is used to meet control requirements associated with BACT, New Source Performance Standards (NSPS), BAT, Maximum Achievable Control Technology, and National Emission Standards for Hazardous Air Pollutants for affected facility operations, storage tanks, and process vents. For efficient permitting structure, the thermal oxidizer has been permitted as a separate and individual emissions unit to contain limitations, operational restrictions, monitoring, record keeping, reporting, and testing associated with control requirements.

It should be noted that the thermal oxidizer control system consists of two identical thermal oxidizers (P001 and P002). One thermal oxidizer will be operational and providing required control at all times while the other unit is ready for use as a backup.

- b. BACT requirements for the thermal oxidizer have been determined to be the following:
- i. designed and operated to meet a 99.5% destruction efficiency for VOC.
 - ii. visible particulate emissions from the thermal oxidizer stack shall not exceed five percent opacity, as a six-minute average.
 - iii. Thermal oxidizer emissions shall not exceed the following:
 - (a) CO – 0.51 lb/hr and 2.22 tons per rolling 12-month period;
 - (b) NO_x – 0.61 lb/hr and 2.67 tons per rolling 12-month period;
 - (c) PM₁₀/PM_{2.5}* - 0.05 lb/hr and 0.20 ton per rolling 12-month period;
 - (d) VOC – 0.03 lbs/hr and 0.14 ton per rolling 12-month period; and
 - (e) CO₂e – 3,161 tons per rolling 12-month period.

*All emissions of particulate matter are PM₁₀/PM_{2.5} and the emission rates of PM₁₀ and PM_{2.5} are considered equivalent for permitting purposes.

- c. BAT requirements under OAC rule 3745-31-05(A)(3) have been determined to be:

- i. for VOC, CO, NOx, and PM₁₀/PM_{2.5} – compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
 - ii. emissions of sulfur dioxide are negligible and are not addressed by BAT requirements in this permit.
 - iii. emissions of greenhouse gas (CO₂e) are not subject to BAT requirements pursuant to OAC 3745-34-31(E)(8).
 - d. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
 - e. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to emissions of NO_x, VOC, and PM₁₀/PM_{2.5} from this air contaminant source since the potential to emit is less than 10 tons/year (taking into account the federally enforceable BACT requirements when applicable).
 - f. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
 - g. The thermal oxidizer is subject to the control device requirements contained in 40 CFR Part 60, Subpart Kb. The control device requirements specified by this rule are equivalent to or less stringent than BACT requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
 - h. The uncontrolled mass rate of particulate emissions from the thermal oxidizer is less than 10 pounds per hour. Therefore, pursuant to OAC rule 3745-17-11(A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule 3745-17-11 does not apply because of the location in Belmont County.
 - i. The emissions from the thermal oxidizer are exempt from the visible particulate emission limitations specified in OAC rule 3745-17-07(A), pursuant to OAC rule 3745-17-07(A)(3)(h), because the emissions unit is not subject to the requirements of OAC rule 3745-17-11.
- c) Operational Restrictions
- (1) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
 - (2) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668)
 - (3) See 40 CFR Part 60, Subpart RRR (40 CFR 60.700 – 60.708)
 - (4) See 40 CFR Part 63, Subpart G (40 CFR 63.110-153).
 - (5) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).

- (6) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100-1114).
- (7) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

d) Monitoring and/or Recordkeeping Requirements

- (1) In order to maintain compliance with the applicable emission limitation(s) contained in this permit, the acceptable average combustion temperature within the thermal oxidizer, for any 3-hour block of time when process and/or storage tank emissions are vented to the thermal oxidizer, shall not be below the average temperature measured during the most recent performance test that demonstrated compliance. Until compliance testing has been conducted, the thermal oxidizer shall be operated and maintained in accordance with the manufacturer's recommendations, instructions, and the operating manual.
- (2) The permittee shall properly install, operate, and maintain a continuous temperature monitor and recorder that measures and records the combustion temperature within the thermal oxidizer when process and/or storage tank emissions are vented to the thermal oxidizer, including periods of startup and shutdown. Units shall be in degrees Fahrenheit. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within \pm 1 percent of the temperature being measured or \pm 5 degrees Fahrenheit, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and the operating manuals, with any modifications deemed necessary by the permittee. The acceptable temperature setting shall be based upon the manufacturer's specifications until such time as any required performance testing is conducted and the appropriate temperature range is established to demonstrate compliance. Following compliance testing, the permittee shall collect and record the following information each day the thermal oxidizer is utilized for control:
 - a. all 3-hour blocks of time, when process and/or storage tank emissions are vented to the thermal oxidizer, during which the average combustion temperature within the thermal oxidizer was below the average temperature measured during the most recent performance test that demonstrated compliance; and
 - b. a log or record of the operating time for the capture (collection) system, thermal oxidizer, monitoring equipment, and associated emissions unit(s).

These records shall be maintained at the facility for a period of five years.

- (3) Whenever the monitored average combustion temperature within the thermal oxidizer deviates from the range or limit established in accordance with this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:
 - a. the date and time the deviation began;
 - b. the magnitude of the deviation at that time;
 - c. the date the investigation was conducted;

- d. the name(s) of the personnel who conducted the investigation; and
- e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable range/limit specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

- f. a description of the corrective action;
- g. the date corrective action was completed;
- h. the date and time the deviation ended;
- i. the total period of time (in minutes) during which there was a deviation;
- j. the temperature readings immediately after the corrective action was implemented; and
- k. the name(s) of the personnel who performed the work.

Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

- (4) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
- (5) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668)
- (6) See 40 CFR Part 60, Subpart RRR (40 CFR 60.700 – 60.708)
- (7) See 40 CFR Part 63, Subpart G (40 CFR 63.110-153).
- (8) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (9) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100-1114).
- (10) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

e) Reporting Requirements

- (1) The permittee shall submit quarterly summaries of the following records:
 - a. all 3-hour blocks of time (when process and/or storage tank emissions are vented to the thermal oxidizer) during which the average combustion temperature within the thermal oxidizer was below the average temperature maintained during the most recent performance test that demonstrated compliance;

- b. any records of downtime (date and length of time) for the capture (collection) system, the thermal oxidizer, and/or the monitoring equipment when process and/or storage tank emissions are vented to the thermal oxidizer; and
- c. a log of the operating time for the capture system, thermal oxidizer, monitoring equipment, and when process and/or storage tank emissions are vented to the thermal oxidizer.

These quarterly reports shall be submitted by April 30, July 31, October 31, and January 31, and shall cover the records for the previous calendar quarters.

- (2) See 40 CFR Part 60, Subpart DDD (40 CFR Part 60.560 – 60.566).
- (3) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668)
- (4) See 40 CFR Part 60, Subpart RRR (40 CFR 60.700 – 60.708)
- (5) See 40 CFR Part 63, Subpart G (40 CFR 63.110-153).
- (6) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (7) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100-1114).
- (8) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

f) Testing Requirements

- (1) The permittee shall conduct, or have conducted, emission testing for one of the two thermal oxidizers in accordance with the following requirements:
 - a. Emissions testing involving VOC shall be performed within 60 days of achieving the maximum production rate for affected facility controlled by the thermal oxidizer, but not later than 180 days after initial startup. All other emission testing shall be conducted within 180 days after initial startup of the emissions unit.
 - b. The emission testing shall be conducted to demonstrate compliance with:
 - i. NO_x – 0.61 lb/hr;
 - ii. CO – 0.51 lb/hr;
 - iii. VOC – 0.03 lbs/hr;
 - iv. PM₁₀/PM_{2.5} - 0.05 lb/hr;
 - v. the opacity limitation of five percent, as a six-minute average from the thermal oxidizer stack;
 - vi. the destruction efficiency of \geq 99.5% for VOCs; and
 - vii. the reduction of total organic HAPs by 98 wt%.

- c. The following test methods shall be employed to demonstrate compliance with the allowable emission limitations:
- i. for NOx – Methods 1 - 4 and 7 of 40 CFR Part 60, Appendix A;
 - ii. for CO – Methods 1 - 4 and 10 of 40 CFR Part 60, Appendix A;
 - iii. for VOC – Methods 1 - 4 and 18 and 25, as applicable, of 40 CFR Part 60 Appendix A;
 - iv. for PM₁₀/PM_{2.5} – Methods 1-4 of 40 CFR Part 60, Appendix A, and Methods 201, 201A, and 202 of 40 CFR Part 51, Appendix M and
 - v. for opacity – Method 9 of 40 CFR, Part 60, Appendix A. Opacity readings shall be taken during the sampling runs for testing of the allowable emission limitations in f)(1)b.i. and f)(1)b.ii.
 - vi. the destruction efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the test methods and procedures specified in 3745-21-10(C)(3), or an alternative test protocol approved by the Ohio EPA. The test methods and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.
 - vii. the reduction of total organic HAPs shall be determined in accordance with the test methods and procedures specified in 40 CFR 63.116(c), 40 CFR 63.997, 40 CFR 61.355, 40 CFR Part 63, Subpart FFFF, and 40 CFR Part 63, Subpart YY* or an alternative test protocol approved by the Ohio EPA or U.S. EPA.

*Overlap provisions with other regulations within in the subpart may be applied.

Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA. Alternatives of test methods and procedures may involve approval from U.S. EPA based on the delegation of authority outlined within specific regulations.

- d. During the emissions testing, the emissions unit shall be operated under operational conditions approved in advance by the appropriate Ohio EPA District Office or local air agency. Operational conditions that may need to be approved include, but are not limited to, the production rate, the type of material processed, material make-up (solvent content, etc.), or control equipment operational limitations (burner temperature, precipitator voltage, etc.). In general, testing shall be done under “worst case” conditions expected during the life of the permit. As part of the information provided in the “Intent to Test” notification form described below, the permittee shall provide a description of the emissions unit operational conditions they will meet during the emissions testing and describe

why they believe "worst case" operating conditions will be met. Prior to conducting the test(s), the permittee shall confirm with the appropriate Ohio EPA District Office or local air agency that the proposed operating conditions constitute "worst case". Failure to test under the approved conditions may result in Ohio EPA not accepting the test results as a demonstration of compliance.

- e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the appropriate Ohio EPA District Office or local air agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA District Office's or local air agency's refusal to accept the results of the emission test(s).
 - f. Personnel from the appropriate Ohio EPA District Office or local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
 - g. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the appropriate Ohio EPA District Office or local air agency.
- (2) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:
- a. Emissions Limitations:
 - i. Short-term emissions shall not exceed:
 - (a) NO_x – 0.61 lb/hr;
 - (b) CO – 0.51 lb/hr;
 - (c) VOC – 0.03 lbs/hr;
 - (d) PM₁₀/PM_{2.5} - 0.05 lb/hr;
 - (e) Opacity - visible particulate emissions from the catalytic combustion unit stack shall not exceed five percent opacity, as a six-minute average; and
 - (f) Control requirements - the destruction efficiency of \geq 99.5% for VOCs and the reduction of total organic HAPs by 98 wt%.

Applicable Compliance Method:

Compliance with the short-term emission limitations during normal operations shall be demonstrated based on the testing requirements in f)(1).

- ii. Annual emissions shall not exceed:

Applicable Compliance Method:

- (a) CO – 2.22 tons per rolling 12-month period;
- (b) NO_x – 2.67 tons per rolling 12-month period;
- (c) PM₁₀/PM_{2.5} - 0.20 ton per rolling 12-month period; and
- (d) VOC – 0.14 ton per rolling 12-month period.

Applicable Compliance Method:

The annual emission limitations were developed by multiplying the short-term allowable emission limitations in lb/hr, by the maximum annual hours of operation (8,760 hours), and then dividing by 2,000 lbs/ton. Therefore, if compliance is shown with the short-term limitations, compliance shall also be shown with the annual emission limitations.

- (e) CO₂e – 3177 tons per rolling 12-month period.

Applicable Compliance Method:

Compliance with the annual emission limitations is demonstrated based upon the following calculation:

$$M_p = EF_p \left(\frac{6.2 \text{ MMBtu}}{\text{hr}} \right) \left(\frac{8,760 \text{ hrs}}{12 \text{ months}} \right) \left(\frac{1 \text{ ton}}{2,000 \text{ lbs}} \right)$$

Where:

M_p = maximum annual emissions of CO₂e in tons per rolling 12-month period;

EF_p= emission factor of 116.98 lbs CO₂e/MMBtu:

CO₂e = 1168.98 lbs CO₂e/MMBtu is based on emissions of carbon dioxide (CO₂), methane (CH₄), and nitrogen dioxide (N₂O) adjusted for global warming potentials. CO₂ and CH₄ emissions based on factors from 40 CFR 98, Tables C-1 & C-2. N₂O emissions based on factors from 40 CFR 98, Table C-2;

6.2 MMBtu/hr = maximum heat input for thermal oxidizer based on the composition of inlet stream to the thermal oxidizer and an inlet stream feed rate; and

8,760 hrs/yr = maximum annual operating schedule in rolling 12-month period.

g) Miscellaneous Requirements

- (1) None.

9. P003, High Pressure Ground Flare (B-5001)

Operations, Property and/or Equipment Description:

1.8 MMBtu/hr high-pressure, multi-point, staged ground flare

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

- (1) b)(1)c., b)(2)e. and b)(2)f.

- b) Applicable Emissions Limitations and/or Control Requirements

- (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-10 through 3745-31-20 and 3745-31-34	Best Available Control Technology (BACT) for volatile organic compounds (VOC), particulate matter 10 microns or less in size (PM ₁₀), particulate matter 2.5 microns or less in size (PM _{2.5}), carbon monoxide (CO), nitrogen oxides (NO _x) and carbon dioxide equivalents (CO ₂ e). See b)(2)b.
b.	OAC rule 3745-31-05(A)(3) June 30, 2008	See b)(2)c. and b)(2)d.
c.	OAC rule 3745-31-05(A)(3)(a)(ii) June 30, 2008	See b)(2)e. and b)(2)f.
d.	OAC rule 3745-21-09(DD)	See b)(2)g.
e.	40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668) [This emissions unit is used to meet the control requirements specified in this section]	Flare requirements, monitoring, reporting and testing [40 CFR 60.660 through 60.668] See c)(5), d)(3) and e)(2).
f.	40 CFR Part 60, Subpart RRR (40 CFR 60.700 – 60.708) [This emissions unit is used to meet the control requirements specified in this section]	Flare requirements, monitoring, testing, and reporting [40 CFR 60.700 through 60.708] See c)(6), d)(4) and e)(3).
g.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.19)	All of the General Provisions of 40 CFR Part 60, Subpart A are applicable except

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		for the following: §60.7(c) does not apply to 40 CFR Subpart NNN [§60.665(k)]; and §60.7(c) does not apply to 40 CFR Subpart RRR [§60.705(k)]
h.	40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999) [This emissions unit is used to meet the control requirements specified in 40 CFR Part 63, Subpart YY and is referenced for use by the above subpart]	Closed vent system and flare requirements [40 CFR 63.980 – 63.999] See c)(7), d)(5) and e)(4).
i.	40 CFR Part 63, Subpart YY (40 CFR 63.1100 – 63.1114) [This emissions unit is used to meet the control requirements specified in this section]	Flare requirements [40 CFR 63.1100 – 63.1114] See c)(8), d)(6) and e)(5).
j.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	General Provisions [§63.1 through §60.16]

(2) Additional Terms and Conditions

- a. The high pressure (HP) ground flare is used to meet control requirements associated with BACT, New Source Performance Standards (NSPS), BAT, and Maximum Achievable Control Technology for affected facility operations and process vents. For efficient permitting structure, the HP ground flare has been permitted as a separate and individual emissions unit to contain limitations, operational restrictions, monitoring, record keeping, reporting, and testing associated with control requirements.
- b. BACT requirements for the HP ground flare have been determined to be the following:
 - i. designed and operated to meet a 98% destruction efficiency for VOC.
 - ii. no visible emissions except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.
 - iii. flaring emissions (normal operations) shall not exceed the following:
 - (a) CO – 2.9171 tons per rolling 12-month period;
 - (b) NO_x – 0.536 ton per rolling 12-month period;

- (c) PM₁₀/PM_{2.5}* - 0.059 ton per rolling 12-month period;
- (d) VOC – 4.494 tons per rolling 12-month period; and
- (e) CO2e – 923. tons per rolling 12-month period.

*All emissions of particulate matter are PM₁₀/PM_{2.5} and the emission rates of PM₁₀ and PM_{2.5} are considered equivalent for permitting purposes.

- c. BAT requirements under OAC rule 3745-31-05(A)(3) have been determined to be:
 - i. for NOx, CO, VOC, and PM₁₀/PM_{2.5} – compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
 - ii. emissions of sulfur dioxide are negligible and are not addressed by BAT requirements in this permit.
- d. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- e. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to emissions of NO_x, CO, VOC, and PM₁₀/PM_{2.5} from this air contaminant source since the potential to emit is less than 10 tons/year (taking into account the federally enforceable BACT requirements when applicable).
- f. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- g. The HP ground flare is subject to the flare requirements contained in OAC rule 3745-21-09(DD)(10)(d). The flare requirements specified by this rule are equivalent to or less stringent than BACT requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
- h. The permittee shall properly install, operate, and maintain a device to continuously monitor the flare pilot flame. The monitoring device and any recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

c) Operational Restrictions

- (1) The HP ground flare shall be designed and operated as follows:
 - a. The flare shall be designed for and operated with no visible emissions, as determined by Method 22 of Appendix A of 40 CFR Part 60, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

- b. The flare shall be operated with a flame present at all times when gases are vented to it. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame. The net heating value of the gas being combusted and the actual exit velocity shall be calculated as required in the Testing Section of this permit.
 - c. The net heating value (H_T) of the gas being combusted and actual exit velocity of the flare shall be calculated as required in the Testing Section of this permit.
- (2) The HP ground flare shall be steam-assisted, air-assisted, or non-assisted, and shall comply with the following requirements for the heat content in paragraph "a" **and** the maximum tip velocity in paragraph "b", **or** shall comply with the alternative requirements in paragraph "c" for non-assisted flares:
- a. Steam-assisted or air-assisted flares shall have a net heating value of 300 Btu/scf (11.2 MJ/scm) or greater, for the gas being combusted.

Non-assisted flares shall have a net heating value of 200 Btu/scf (7.45 MJ/scm) for the gas being combusted.
 - b. Steam-assisted and/or non-assisted flares shall be designed for and operated with an exit velocity of less than 18.3 m/sec (60 ft/sec), with the following exceptions:
 - i. steam-assisted and non-assisted flares, having a net heating value of 1,000 Btu/scf (37.3 MJ/scm) for the gas being combusted, can be designed for and operated with an exit velocity equal to or greater than 18.3 m/sec (60 ft/sec), but less than 122 m/sec (400 ft/sec); and

steam-assisted and non-assisted flares can be designed for and operated with an exit velocity of less than the velocity calculated below for V_{max} , and less than 122 m/sec (400 ft/sec):

$$\text{Log10 } (V_{max}) = (H_T + 28.8)/31.7$$

where:

V_{max} = maximum permitted velocity, m/sec;

28.8 = constant;

31.7 = constant; and

H_T = the net heating value as determined in the Testing Section of this permit.
 - ii. Air-assisted flares shall be designed and operated with an exit velocity less than the velocity V_{max} , calculated as follows:

$$V_{max} = 8.706 + 0.7084 (H_T)$$

where:

V_{max} = maximum permitted velocity, m/sec;
 8.706 = constant;
 0.7084 = constant; and
 H_T = the net heating value as determined in the Testing Section of this permit.

OR

- c. Non-assisted flares that have a diameter of 3 inches or greater and a hydrogen content of 8.0 percent (by volume), or greater, shall be designed for and operated with an exit velocity of less than 37.2 m/sec (122 ft/sec) and less than the velocity, V_{max} , as determined by the following equation:

$$V_{max} = (X_{H_2} - K_1) K_2$$

where:

V_{max} = maximum permitted velocity, m/sec;

K_1 = constant, 6.0 volume-percent hydrogen;

K_2 = constant, 3.9 (m/sec)/volume-percent hydrogen; and

X_{H_2} = the volume-percent of hydrogen, on a wet basis, as calculated by using the ASTM Method D1946-90.

- (3) The permittee may request a determination of alternative means of emission limitation (AMEL) as outlined in the table below to the flare requirements of the following 40 CFR Part 60 and 63 Subparts:

40 CFR Part 60 and 63 Subparts	Provisions for AMEL
40 CFR Part 60 Subpart NNN	Clean Air Act section 111(h)(3)
40 CFR Part 60 Subpart RRR	Clean Air Act section 111(h)(3)
40 CFR Part 63 Subpart SS	Clean Air Act section 112(h)(3)
40 CFR Part 63 Subpart YY	40 CFR Part 63.1113

- (4) A pilot flame shall be maintained at all times in the flare's pilot light burner. The presence of the pilot flame shall be monitored using a thermocouple or other equivalent device to detect the presence of a flame.
- (5) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660-668).
- (6) See 40 CFR Part 60, Subpart RRR (40 CFR Part 60.700 – 60.708)

- (7) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (8) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100-1114).

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall monitor the flare to ensure that it is operated and maintained in conformance with its design and the requirements contained in this permit. The net heating value of a gas, the actual exit velocity for the flare shall be determined as specified 40 CFR 60.18 and 40 CFR 63.11.
- (2) The permittee shall record the following information each day for the flare and process operations:
 - a. The permittee shall record all periods of time during which there was no pilot flame or the flare was inoperable.
- (3) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660-668).
- (4) See 40 CFR Part 60, Subpart RRR (40 CFR Part 60.700 – 60.708)
- (5) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (6) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100-1114).

e) Reporting Requirements

- (1) The permittee shall submit quarterly deviation reports that identify all periods of time during which the pilot flame was not functioning properly, or the flare was not maintained as required in this permit. The reports shall include the date, time, and duration of each such period.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (2) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660-668).
- (3) See 40 CFR Part 60, Subpart RRR (40 CFR Part 60.700 – 60.708)
- (4) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (5) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100-1114).

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

There shall be no visible emissions from the flare, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

Applicable Compliance Method:

If required, compliance with the visible emissions limitation shall be determined in accordance with U.S. EPA Method 22 in Appendix A of 40 CFR Part 60.

b. Emission Limitations:

Annual emissions from normal operations of the HP ground flare shall not exceed:

CO – 2.917 tons per rolling 12-month period;

NO_x – 0.536 ton per rolling 12-month period;

PM₁₀/PM_{2.5} - 0.059 ton per rolling 12-month period;

VOC – 4.494 tons per rolling 12-month period; and

CO_{2e} – 923 tons per rolling 12-month period.

Applicable Compliance Method:

Compliance with the annual emission limitations is demonstrated based upon the following calculation:

$$M_p = EF_p \left(\frac{1.8 \text{ MMBtu}}{\text{hr}} \right) \left(\frac{8760 \text{ hrs}}{12 \text{ months}} \right) \left(\frac{1 \text{ ton}}{2000 \text{ lbs}} \right)$$

Where:

M_p = maximum annual emissions of pollutant p in tons per rolling 12-month period;

EF_p= emission factor for the individual pollutant in lb/MMBtu:

NOx = 0.068 [emission factor from U.S. EPA AP-42, Chapter 13.5 (4/2015)];

CO = 0.37 [emission factor from U.S. EPA AP-42, Chapter 13.5 (4/2015)];

VOC = 0.57 [emission factor from U.S. EPA AP-42, Chapter 13.5 (4/2015)];

$\text{CO}_{2e} = 116.89$ [based on emissions of carbon dioxide (CO_2), methane (CH_4), and nitrogen dioxide (N_2O) adjusted for global warming potentials. CO_2 and CH_4 emissions based on factors from 40 CFR 98, Tables C-1 & C-2. N_2O emissions based on factors from 40 CFR 98, Table C-1 and AP-42, Chapter 13.5 (4/2015);

1.8 MMBtu/hr = maximum heat input for HP ground flare-based engineering calculations of natural gas usage for pilot flame and purge gas and maximum VOC flaring rate based on cold-startup as “worst-case” scenario; and

8,760 hrs/yr = maximum annual operating schedule in rolling 12-month period;

c. Emission Limitations:

Combust the emissions in a flare that meets the requirements of §60.18. The flare requirements of §60.18 are consistent with a destruction efficiency of 98% for VOC emissions required in b)(2)b.; and

Reduce emissions of organic HAP by 98 weight-percent; or reduce organic HAP or TOC to a concentration of 20 parts per million by volume; whichever is less stringent.

Applicable Compliance Method:

Compliance shall be demonstrated by the requirements outlined in 40 CFR Part 60.18 Subpart A, 40 CFR Part 63.11, 40 CFR Part 63, Subpart YY, and 40 CFR Part 63, Subpart SS, as applicable.

g) Miscellaneous Requirements

- (1) None.

10. P004, Low Pressure Ground Flare (B-5002)

Operations, Property and/or Equipment Description:

0.78 MMBtu/hr low-pressure, multi-point, staged ground flare

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (1) b)(1)c., b)(2)e. and b)(2)f.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-10 through 3745-31-20 and 3745-31-34	Best Available Control Technology (BACT) for volatile organic compounds (VOC), particulate matter 10 microns or less in size (PM_{10}), particulate matter 2.5 microns or less in size ($PM_{2.5}$), carbon monoxide (CO), nitrogen oxides (NO_x) and carbon dioxide equivalents (CO_2e). See b)(2)b.
b.	OAC rule 3745-31-05(A)(3) June 30, 2008	See b)(2)c. and b)(2)d.
c.	OAC rule 3745-31-05(A)(3)(a)(ii) June 30, 2008	See b)(2)e. and b)(2)f.
d.	OAC rule 3745-21-09(DD)	See b)(2)g.
e.	40 CFR Part 60, Subpart NNN (40 CFR 60.660 – 60.668) [This emissions unit is used to meet the control requirements specified in this section]	Flare requirements, monitoring, reporting and testing [40 CFR 60.660 through 60.668] See c)(5), d)(3) and e)(2).
f.	40 CFR Part 60, Subpart RRR (40 CFR 60.700 – 60.708) [This emissions unit is used to meet the control requirements specified in this section]	Flare requirements, monitoring, testing, and reporting [40 CFR 60.700 through 60.708] See c)(6), d)(4) and e)(3).
g.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.19)	All of the General Provisions of 40 CFR Part 60, Subpart A are applicable except

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		for the following: §60.7(c) does not apply to 40 CFR Subpart NNN [§60.665(k)]; and §60.7(c) does not apply to 40 CFR Subpart RRR [§60.705(k)]
h.	40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999) [This emissions unit is used to meet the control requirements specified in 40 CFR Part 63, Subpart YY and is referenced for use by the above subpart]	Closed vent system and flare requirements [40 CFR 63.980 – 63.999] See c)(7), d)(5) and e)(4).
i.	40 CFR Part 63, Subpart YY (40 CFR 63.1100 – 63.1114) [This emissions unit is used to meet the control requirements specified in this section]	Flare requirements [40 CFR 63.1100 – 63.1114] See c)(8), d)(6) and e)(5).
j.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	General Provisions [§63.1 through §60.16]

(2) Additional Terms and Conditions

- a. The low pressure (LP) ground flare is used to meet control requirements associated with BACT, New Source Performance Standards (NSPS), BAT, and Maximum Achievable Control Technology for affected facility operations and process vents. For efficient permitting structure, the ECU ground flare has been permitted as a separate and individual emissions unit to contain limitations, operational restrictions, monitoring, record keeping, reporting, and testing associated with control requirements.
- b. BACT requirements for the LP ground flare have been determined to be the following:
 - i. designed and operated to meet a 98% destruction efficiency for VOC.
 - ii. no visible emissions except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.
 - iii. flaring emissions (normal operations) shall not exceed the following:
 - (a) CO – 1.26 tons per rolling 12-month period;
 - (b) NO_x – 0.232 ton per rolling 12-month period;

- (c) PM₁₀/PM_{2.5}* - 0.026 ton per rolling 12-month period;
- (d) VOC – 1.97 tons per rolling 12-month period; and
- (e) CO₂e – 400 tons per rolling 12-month period.

*All emissions of particulate matter are PM₁₀/PM_{2.5} and the emission rates of PM₁₀ and PM_{2.5} are considered equivalent for permitting purposes.

- c. BAT requirements under OAC rule 3745-31-05(A)(3) have been determined to be:
 - i. for NO_x, CO, VOC, and PM₁₀/PM_{2.5} – compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
 - ii. emissions of sulfur dioxide are negligible and are not addressed by BAT requirements in this permit.
- d. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- e. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to emissions of NO_x, CO, VOC, and PM₁₀/PM_{2.5} from this air contaminant source since the potential to emit is less than 10 tons/year (taking into account the federally enforceable BACT requirements when applicable).
- f. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- g. The LP ground flare is subject to the flare requirements contained in OAC rule 3745-21-09(DD)(10)(d). The flare requirements specified by this rule are equivalent to or less stringent than BACT requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
- h. The permittee shall properly install, operate, and maintain a device to continuously monitor the flare pilot flame. The monitoring device and any recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

c) Operational Restrictions

- (1) The LP ground flare shall be designed and operated as follows:
 - a. The flare shall be designed for and operated with no visible emissions, as determined by Method 22 of Appendix A of 40 CFR Part 60, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

- b. The flare shall be operated with a flame present at all times when gases are vented to it. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame. The net heating value of the gas being combusted and the actual exit velocity shall be calculated as required in the Testing Section of this permit.
 - c. The net heating value (H_T) of the gas being combusted and actual exit velocity of the flare shall be calculated as required in the Testing Section of this permit.
- (2) The ECU ground flare shall be steam-assisted, air-assisted, or non-assisted, and shall comply with the following requirements for the heat content in paragraph "a" **and** the maximum tip velocity in paragraph "b", **or** shall comply with the alternative requirements in paragraph "c" for non-assisted flares:
- a. Steam-assisted or air-assisted flares shall have a net heating value of 300 Btu/scf (11.2 MJ/scm) or greater, for the gas being combusted.

Non-assisted flares shall have a net heating value of 200 Btu/scf (7.45 MJ/scm) for the gas being combusted.
 - b. Steam-assisted and/or non-assisted flares shall be designed for and operated with an exit velocity of less than 18.3 m/sec (60 ft/sec), with the following exceptions:
 - i. steam-assisted and non-assisted flares, having a net heating value of 1,000 Btu/scf (37.3 MJ/scm) for the gas being combusted, can be designed for and operated with an exit velocity equal to or greater than 18.3 m/sec (60 ft/sec), but less than 122 m/sec (400 ft/sec); and

steam-assisted and non-assisted flares can be designed for and operated with an exit velocity of less than the velocity calculated below for V_{max} , and less than 122 m/sec (400 ft/sec):

$$\text{Log10 } (V_{max}) = (H_T + 28.8)/31.7$$

where:

V_{max} = maximum permitted velocity, m/sec;

28.8 = constant;

31.7 = constant; and

H_T = the net heating value as determined in the Testing Section of this permit.
 - ii. Air-assisted flares shall be designed and operated with an exit velocity less than the velocity V_{max} , calculated as follows:

$$V_{max} = 8.706 + 0.7084 (H_T)$$

where:

V_{max} = maximum permitted velocity, m/sec;
 8.706 = constant;
 0.7084 = constant; and
 H_T = the net heating value as determined in the Testing Section of this permit.

OR

- c. Non-assisted flares that have a diameter of 3 inches or greater and a hydrogen content of 8.0 percent (by volume), or greater, shall be designed for and operated with an exit velocity of less than 37.2 m/sec (122 ft/sec) and less than the velocity, V_{max} , as determined by the following equation:

$$V_{max} = (X_{H_2} - K_1) K_2$$

where:

V_{max} = maximum permitted velocity, m/sec;

K_1 = constant, 6.0 volume-percent hydrogen;

K_2 = constant, 3.9 (m/sec)/volume-percent hydrogen; and

X_{H_2} = the volume-percent of hydrogen, on a wet basis, as calculated by using the ASTM Method D1946-90.

- (3) The permittee may request a determination of alternative means of emission limitation (AMEL) as outlined in the table below to the flare requirements of the following 40 CFR Part 60 and 63 Subparts:

40 CFR Part 60 and 63 Subparts	Provisions for AMEL
40 CFR Part 60 Subpart NNN	Clean Air Act section 111(h)(3)
40 CFR Part 60 Subpart RRR	Clean Air Act section 111(h)(3)
40 CFR Part 63 Subpart SS	Clean Air Act section 112(h)(3)
40 CFR Part 63 Subpart YY	40 CFR Part 63.1113

- (4) A pilot flame shall be maintained at all times in the flare's pilot light burner. The presence of the pilot flame shall be monitored using a thermocouple or other equivalent device to detect the presence of a flame.
- (5) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660-668).
- (6) See 40 CFR Part 60, Subpart RRR (40 CFR Part 60.700 – 60.708)

- (7) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (8) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100-1114).

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall monitor the flare to ensure that it is operated and maintained in conformance with its design and the requirements contained in this permit. The net heating value of a gas, the actual exit velocity for the flare shall be determined as specified 40 CFR 60.18 and 40 CFR 63.11.
- (2) The permittee shall record the following information each day for the flare and process operations:
 - a. The permittee shall record all periods of time during which there was no pilot flame or the flare was inoperable.
- (3) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660-668).
- (4) See 40 CFR Part 60, Subpart RRR (40 CFR Part 60.700 – 60.708)
- (5) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (6) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100-1114).

e) Reporting Requirements

- (1) The permittee shall submit quarterly deviation reports that identify all periods of time during which the pilot flame was not functioning properly or the flare was not maintained as required in this permit. The reports shall include the date, time, and duration of each such period.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (2) See 40 CFR Part 60, Subpart NNN (40 CFR 60.660-668).
- (3) See 40 CFR Part 60, Subpart RRR (40 CFR Part 60.700 – 60.708)
- (4) See 40 CFR Part 63, Subpart SS (40 CFR 63.980-999).
- (5) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100-1114).

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

There shall be no visible emissions from the flare, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

Applicable Compliance Method:

If required, compliance with the visible emissions limitation shall be determined in accordance with U.S. EPA Method 22 in Appendix A of 40 CFR Part 60.

b. Emission Limitations:

Annual emissions from the ECU Ground Flare shall not exceed:

CO – 1.26 tons per rolling 12-month period;

NO_x – 0.232 tons per rolling 12-month period;

PM₁₀/PM_{2.5} - 0.026 ton per rolling 12-month period;

VOC – 1.97 tons per rolling 12-month period; and

CO_{2e} – 400 tons per rolling 12-month period.

Applicable Compliance Method:

Compliance with the annual emission limitations is demonstrated based upon the following calculation:

$$M_p = EF_p \left(\frac{0.78 \text{ MMBtu}}{\text{hr}} \right) \left(\frac{8760 \text{ hrs}}{12 \text{ months}} \right) \left(\frac{1 \text{ ton}}{2000 \text{ lbs}} \right)$$

Where:

M_p = maximum annual emissions of pollutant p in tons per rolling 12-month period;

EF_p = emission factor for the individual pollutant in lb/MMBtu:

NO_x = 0.068 [emission factor from U.S. EPA AP-42, Chapter 13.5 (4/2015)];

CO = 0.37 [emission factor from U.S. EPA AP-42, Chapter 13.5 (4/2015)];

VOC = 0.57 [emission factor from U.S. EPA AP-42, Chapter 13.5 (4/2015)];

CO_{2e} = 116.89 [based on emissions of carbon dioxide (CO₂), methane (CH₄), and nitrogen dioxide (N₂O) adjusted for global warming potentials. CO₂ and CH₄

emissions based on factors from 40 CFR 98, Tables C-1 & C-2. N₂O emissions based on factors from 40 CFR 98, Table C-1 and AP-42, Chapter 13.5 (4/2015);

0.78 MMBtu/hr = maximum heat input for ECU Ground Flare based engineering calculations of natural gas usage for pilot flame and purge gas and maximum VOC flaring rate based on cold-startup as “worst-case” scenario; and

8,760 hrs/yr = maximum annual operating schedule in rolling 12-month period;

c. Emission Limitations:

Combust the emissions in a flare that meets the requirements of §60.18. The flare requirements of §60.18 are consistent with a destruction efficiency of 98% for VOC emissions required in b)(2)b.; and

Reduce emissions of organic HAP by 98 weight-percent; or reduce organic HAP or TOC to a concentration of 20 parts per million by volume; whichever is less stringent.

Applicable Compliance Method:

Compliance shall be demonstrated by the requirements outlined in 40 CFR Part 60.18 Subpart A, 40 CFR Part 63.11, 40 CFR Part 63, Subpart YY, and 40 CFR Part 63, Subpart SS, as applicable.

g) Miscellaneous Requirements

- (1) None.

11. P806, Wastewater Collection and Treatment

Operations, Property and/or Equipment Description:

Wastewater treatment plant and associated collection and treatment systems for treatment of wastewater generated in the ethylene manufacturing process, the high-density polyethylene units, the linear low-density polyethylene units, the air separation unit, and all sanitary wastewater; includes an oily water treatment plant, a process biological treatment plant and a sanitary treatment plant; emissions sources include: a 12% NaClO₂ storage tank (T-5205) and a 98% sulfuric acid storage tank (T-3502) vented to atmosphere, a wet air oxidation unit, an equalization tank (T-6503), an oily wastewater storage tank (T-6501), a corrugated plate interceptor (CPI) package, a waste oil tank (T-6502), a dissolved gas floatation (DGF) unit and GCF/CPI sump covered and vented to one primary and one backup 1.0 MMBtu/hr thermal oxidizers

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (1) b)(1)d. and b)(2)d.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	<p>Volatile organic compound (VOC) emissions from the thermal oxidizer stack shall not exceed 0.01 pound per hour and 0.02 ton per rolling, 12-month period.</p> <p>Nitrogen oxides (NO_x) emissions shall not exceed 0.098 pound per hour and 0.43 ton per rolling, 12-month period.</p> <p>Carbon monoxide (CO) emissions shall not exceed 0.082 pound per hour and 0.36 ton per rolling, 12-month period.</p> <p>Particulate emissions (PE) and emissions of particulate matter less than 10 microns (PM10) and particulate matter less than 2.5 microns (PM2.5) shall not exceed 0.008 pound per hour and 0.030 ton per rolling, 12-month period.</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>Visible PE from the thermal oxidizer stack shall not exceed five percent opacity, as a six-minute average.</p> <p>Carbon dioxide equivalents (CO₂e) emissions shall not exceed 513 tons per rolling, 12-month period.</p> <p>See b)(2)a. and b. below.</p>
b.	ORC 3704.03(T) and OAC rule 3745-31-05(A)(3)	<p>The requirements of this rule are equivalent to the requirements of OAC rules 3745-31-10 through 3745-31-20 for volatile organic compound (VOC) emissions.</p> <p>Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO₂e emissions from this air contaminant source pursuant to OAC rule 3745-31-34(E)(8).</p>
c.	OAC rule 3745-31-05(A)(3), as effective June 30, 2008	<p>The requirements of this rule are equivalent to the requirements of OAC rules 3745-31-10 through 3745-31-20 for NO_x, CO, and PE/PM₁₀/PM_{2.5}.</p> <p>See b)(2)c. and c)(1) below.</p>
d.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective June 30, 2008	<p>The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to emissions of NO_x, CO, SO₂ and PE/PM₁₀/PM_{2.5} from this air contaminant source since the potential to emit is less than 10 tons/year.</p> <p>See b)(2)d. below.</p>
e.	OAC rule 3745-17-11(B)	See b)(2)e. below.
f.	OAC rule 3745-17-07(A)	See b)(2)f. below.
g.	<p>40 CFR Part 63, Subpart YY (40 CFR 63.1100 – 63.1114)</p> <p>[In accordance with 40 CFR 63.1100, Table 1 of 40 CFR 63.1100, and 63.1103(e)(1)(E), this emissions unit manages waste streams from a new ethylene production unit that contain 1,3 butadiene or benzene and are</p>	<p><i>Requirements for ethylene production unit:</i></p> <p>Meet the requirements in Table 7(g) of 40 CFR 63.1103(e) to control organic HAP emissions from ethylene production processes by complying with the waste requirements of 40 CFR Part 63, Subpart XX.</p> <p>[40 CFR 63.1103(e)(3) and Table 7(g)]</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	subject to the emissions limitations/control measures specified in this section.]	The oily waste water storage tank (5T-6501) and the waste oil tank (5T-6502) are exempt from the requirements of 40 CFR 63.1103(e)(3) because they store organic liquids that contain organic HAP as impurities. [40 CFR 63.1103(e)(1)(ii)(G)]
h.	<p>40 CFR Part 63, Subpart XX (40 CFR 63.1080 – 63.1097)</p> <p>[In accordance with 40 CFR 63.1080, 63.1092(a) and 63.1093, this emissions unit manages waste streams from a new ethylene production unit that is a major source of hazardous air pollutants (HAPs) referenced to 40 CFR Part 63, Subpart XX from 40 CFR Part 63, Subpart YY, and are subject to the emissions limitations/control measures specified in this section.]</p>	<p><i>Continuous butadiene waste streams from ethylene production unit:</i></p> <p>Manage and treat continuous butadiene waste streams from ethylene production units that contain greater than or equal to 10 ppmw 1,3-butadiene and have a flow rate greater than or equal to 0.02 liters per minute, according to either paragraph (a)(1) or (2) of 40 CFR 63.1095, except during periods of startup, shutdown and malfunction, if the startup, shutdown or malfunction precludes the ability to comply with the requirements of 40 CFR 63.1095(a) and the provisions specified in 40 CFR 63.1111 are met. [40 CFR 63.1095(a)]</p> <p><i>Waste streams that contain benzene from ethylene production unit:</i></p> <p>Comply with requirements of 40 CFR Part 61, Subpart FF for waste streams from ethylene production units that contain benzene, except as specified in Table 2 of 40 CFR Part 63, Subpart XX. See b)(1)e. below. [40 CFR 63.1095(b) and Table 2 of 40 CFR Part 63, Subpart XX]</p> <p>Manage and treat spent caustic waste streams and dilution steam blowdown waste streams from ethylene production units according to 40 CFR 61.342(c)(1)-(3)(i), except during periods of startup, shutdown and malfunction, if the startup, shutdown or malfunction precludes the ability to comply with the requirements of</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>40 CFR 63.1095(b)(1) and the provisions specified in 40 CFR 63.1111 are met. [40 CFR 63.1095(b)(1)]</p>
i.	<p>40 CFR Part 61, Subparts A and FF (40 CFR 61.01 – 61.19 and 40 CFR 61.340 – 61.359)</p> <p>[In accordance with 40 CFR 61.340, this emissions unit manages benzene-containing hazardous waste from a chemical manufacturing plant that is a hazardous waste treatment, storage, and disposal facility subject to the emissions limitations/control measures specified in these sections.]</p>	<p><i>Source-wide requirements:</i></p> <p>This facility is exempt from the requirements of 40 CFR 61.342(b) and (c) because the total annual benzene quantity from facility waste is less than 10 megagrams (MG)(11 tons) calculated according to 40 CFR 61.342(a). See b)(2)a.i. below. [40 CFR 61.342(a)]</p> <p><i>Requirements for spent caustic waste streams and dilution steam blowdown waste streams containing benzene from the ethylene production unit:</i></p> <p>Pursuant to 40 CFR 63.1095(b)(1) and 61.342(c), for each spent caustic waste stream and each dilution steam blowdown waste stream from ethylene production units that contains benzene, including (but not limited to) organic waste streams that contain less than 10 percent water and aqueous waste streams, even if the wastes are not discharged to an individual drain system, the permittee shall:</p> <p>Remove or destroy the benzene contained in the waste using a treatment process or wastewater treatment system that complies with the standards specified in 40 CFR 61.348. [40 CFR 61.342(c)(1)(i)]</p> <p>Comply with the standards specified in 40 CFR 61.343 through 61.347 for each waste management unit that receives or manages the waste stream prior to and during treatment of the waste stream in accordance with paragraph (c)(1)(i). See b)(2)a.i. and b)(2)a.ii. below. [40 CFR 61.342(c)(1)(ii)]</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>Each waste management unit used to manage or treat waste streams that will be recycled to a process shall comply with the standards specified in 40 CFR 61.343 through 61.347. Once the waste stream is recycled to a process, including to a tank used for the storage of production process feed, product, or product intermediates, unless this tank is used primarily for the storage of wastes, the material is no longer subject to 40 CFR 61.342(c). [40 CFR 61.342(c)(1)(iii)]</p> <p>Spent caustic waste streams and dilution steam blowdown waste streams from ethylene production units are exempt from 40 CFR 61.342(c)(1) if the permittee demonstrates initially and, thereafter, at least once per year, that the flow-weighted annual average benzene concentration for the waste stream is less than 10 ppmw as determined by the procedures specified in 40 CFR 61.355(c)(2) or 61.355(c)(3). [40 CFR 61.342(c)(2)]</p> <p>Spent caustic waste streams and dilution steam blowdown waste streams from ethylene production units are exempt from 40 CFR 61.342(c)(1) provided that the permittee demonstrates initially and, thereafter, at least once per year that the waste stream is process wastewater that has a flow rate less than 0.02 liters per minute (0.005 gallons per minute) or an annual wastewater quantity of less than 10 Mg/yr (11 ton/yr). [40 CFR 61.342(c)(3)]</p> <p>See b)(2)a.iii. below.</p>
j.	<p>40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550)</p> <p>[In accordance with 40 CFR 63.2430, 63.2435 and 63.2440, this</p>	<p><i>Requirements for polyethylene manufacturing units:</i></p> <p>Comply with the emission limits and work practice standards in Tables 1 through 7</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	<p>emissions unit includes wastewater and waste management units associated with new polyethylene manufacturing units subject to the emissions limitations/control measures specified in this section.]</p>	<p>of 40 CFR Part 63, Subpart FFFF at all times, except during periods of startup, shutdown, and malfunction (SSM). [40 CFR 63.2450(a)]</p> <p>Pursuant to 40 CFR 63.2485(a), meet each requirement in Table 7 of 40 CFR Part 63, Subpart FFFF applicable to wastewater streams and liquid streams in open systems generated in the polyethylene manufacturing units:</p> <p>For each process wastewater stream, comply with the requirements in 40 CFR 63.132 through 63.148, except as specified in 40 CFR 63.2485. [Table 7(1.) of 40 CFR Part 63, Subpart FFFF]</p> <p>For each maintenance wastewater stream, comply with the requirements in 40 CFR 63.105, except as specified in 40 CFR 63.2485. [Table 7(2.) of 40 CFR Part 63, Subpart FFFF]</p> <p>or liquid streams in an open system within the polyethylene manufacturing units, comply with the requirements in 40 CFR 63.149, except as specified in 40 CFR 63.2485. [Table 7(3.) of 40 CFR Part 63, Subpart FFFF]</p> <p>See b)(2)a.iv. below.</p>
k	40 CFR Part 63, Subpart A (40 CFR 63.1 - 63.16)	General Provisions

(2) Additional Terms and Conditions

- a. As part of the BACT determination for fugitive VOC emissions, the permittee shall:
 - i. Use an enhanced biodegradation unit to maintain the annual benzene quantity from facility waste at less than 10 megagrams (MG; 11 tons) by combining waste streams with greater than 10 ppmw benzene with waste

streams with less than 10 ppmw benzene to form a combined waste stream with a benzene concentration less than 10 ppmw;

- ii. Route emissions from wastewater generated in the ethylene manufacturing process to a thermal oxidizer designed to achieve >99.5% destruction efficiency for volatile organic compounds (VOC);
- iii. Cover and route emissions from the process wastewater equalization tank (T-6503), the waste oil drum (T-6502), the oily wastewater storage tank (T-6501) and the wet air oxidation unit to a thermal oxidizer designed to achieve >99.5% destruction efficiency for VOC;
- iv. Emissions from wastewater generated in the high-density polyethylene units must comply with the applicable requirements of 40 CFR Part 63, Subpart FFFF;
- v. Emissions from the 98% sulfuric acid storage tank (T-3502) and the 12% NaClO₂ storage tank (T-5205) shall be vented directly to the atmosphere at a safe location.

Compliance with these requirements shall be demonstrated by compliance with the emissions limitations in b)(1)a. and the monitoring and recordkeeping required in d).

- b. As part of the BACT determination for NO_x, CO, SO₂ and PE/PM₁₀/PM_{2.5} emissions, compliance with the BACT requirements shall be demonstrated by compliance with the emissions limitations in b)(1)a.
- c. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- d. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- e. The uncontrolled mass rate of particulate emissions from the thermal oxidizer is less than 10 pounds per hour. Therefore, pursuant to OAC rule 3745-17-11(A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule 3745-17-11 does not apply because of the location in Belmont County.
- f. The emissions from the thermal oxidizer are exempt from the visible particulate emission limitations specified in OAC rule 3745-17-07(A), pursuant to OAC rule 3745-17-07(A)(3)(h), because the emissions unit is not subject to the requirements of OAC rule 3745-17-11.
- g. The permittee shall comply with 40 CFR Part 61, Subpart FF and 40 CFR Part 63, Subparts F, G, XX, YY and FFFF upon startup.

c) Operational Restrictions

- (1) The permittee shall burn only gaseous fuels (i.e., natural gas and waste gas) in this emissions unit. The sulfur content of gaseous fuels combusted shall not exceed 0.005 gr/dscf.
- (2) See 40 CFR Part 61, Subpart FF (40 CFR 61.340 – 61.359).
- (3) See 40 CFR Part 63, Subpart XX (40 CFR 63.1080 – 63.1097).
- (4) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100 – 63.1114).
- (5) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

d) Monitoring and/or Recordkeeping Requirements

- (1) In order to maintain compliance with the applicable emission limitation(s) contained in this permit, the acceptable average combustion temperature within the thermal oxidizer, for any 3-hour block of time when process and/or storage tank emissions are vented to the thermal oxidizer, shall not be below the average temperature measured during the most recent performance test that demonstrated compliance. Until compliance testing has been conducted, the thermal oxidizer shall be operated and maintained in accordance with the manufacturer's recommendations, instructions, and the operating manual.
- (2) The permittee shall properly install, operate, and maintain a continuous temperature monitor and recorder that measures and records the combustion temperature within the thermal oxidizer when process and/or storage tank emissions are vented to the thermal oxidizer, including periods of startup and shutdown. Units shall be in degrees Fahrenheit. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within \pm 1 percent of the temperature being measured or \pm 5 degrees Fahrenheit, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and the operating manuals, with any modifications deemed necessary by the permittee. The acceptable temperature setting shall be based upon the manufacturer's specifications until such time as any required performance testing is conducted and the appropriate temperature range is established to demonstrate compliance. Following compliance testing, the permittee shall collect and record the following information each day the thermal oxidizer is utilized for control:
 - a. all 3-hour blocks of time, when process and/or storage tank emissions are vented to the thermal oxidizer, during which the average combustion temperature within the thermal oxidizer was below the average temperature measured during the most recent performance test that demonstrated compliance; and
 - b. a log or record of the operating time for the capture (collection) system, thermal oxidizer, monitoring equipment, and associated emissions unit(s).

These records shall be maintained at the facility for a period of five years.

- (3) Whenever the monitored average combustion temperature within the thermal oxidizer deviates from the range or limit established in accordance with this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:
- a. the date and time the deviation began;
 - b. the magnitude of the deviation at that time;
 - c. the date the investigation was conducted;
 - d. the name(s) of the personnel who conducted the investigation; and
 - e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable range/limit specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

- f. a description of the corrective action;
- g. the date corrective action was completed;
- h. the date and time the deviation ended;
- i. the total period of time (in minutes) during which there was a deviation;
- j. the temperature readings immediately after the corrective action was implemented; and
- k. the name(s) of the personnel who performed the work.

Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

- (4) The permittee shall maintain monthly records of the following information:
- a. the hours this emissions unit operated, in hours per month;
 - b. the amount of gaseous fuels consumed in this emissions unit, in MMscf;
 - c. the heat content of the gaseous fuels combusted in this emissions unit, in MMBtu/MMscf;
 - d. the sulfur content of the gaseous fuels combusted in this emissions unit, in gr/dscf;

- e. the total VOC emissions, in pounds, calculated by multiplying the VOC emission factor of 0.0054 lb/MMBtu, or the results of the most recent stack test, by the amount of gaseous fuel consumed, as recorded in d)(4)b. and the heat content of the gaseous fuel consumed, as recorded in d)(4)c.;
- f. the total NO_x emissions, in pounds, calculated by multiplying the NO_x emissions factor of 0.098 lb/MMBtu, or the results of the most recent stack test, by the amount of gaseous fuel consumed, as recorded in d)(4)b. and the heat content of the gaseous fuel consumed, as recorded in d)(4)c.;
- g. the total CO emissions, in pounds, calculated by multiplying the CO emissions factor of 0.082 lb/MMBtu, or the results of the most recent stack test, by the amount of gaseous fuel consumed, as recorded in d)(4)b. and the heat content of the gaseous fuel consumed, as recorded in d)(4)c.;
- h. the total PE/PM₁₀/PM_{2.5} emissions, in pounds, calculated by multiplying the PE/PM₁₀/PM_{2.5} emissions factor of 0.0075 lb/MMBtu, or the results of the most recent stack test, by the amount of gaseous fuel consumed, as recorded in d)(4)b. and the heat content of the gaseous fuel consumed, as recorded in d)(4)c.;
- i. the total CO_{2e} emissions, in pounds, calculated by multiplying the CO_{2e} emissions factor of 117.00 lbs/MMBtu, by the amount of gaseous fuel consumed, as recorded in d)(4)b. and the heat content of the gaseous fuel consumed, as recorded in d)(4)c.;
- j. The rolling, 12-month summation of the VOC emissions, in tons, calculated by adding the total VOC emissions for the present month as recorded in d)(4)e., plus the total VOC emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds;
- k. the rolling, 12-month summation of the NO_x emissions, in tons, calculated by adding the total NO_x emissions for the present month as recorded in d)(7)f., plus the total NO_x emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds;
- l. The rolling, 12-month summation of the CO emissions, in tons, calculated by adding the total CO emissions for the present month as recorded in d)(4)g., plus the total CO emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds;
- m. The rolling, 12-month summation of the PE/PM₁₀/PM_{2.5}, in tons, calculated by adding the total PE/PM₁₀/PM_{2.5} emissions for the present month as recorded in d)(4)h., plus the total PE/PM₁₀/PM_{2.5} emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds; and
- n. The rolling, 12-month summation of the CO_{2e} emissions, in tons, calculated by adding the total CO_{2e} emissions for the present month as recorded in d)(4)i., plus the total CO_{2e} emissions for the previous 11 months, and dividing by 1 ton/2,000 pounds.

- (5) See 40 CFR Part 61, Subpart FF (40 CFR 61.340 – 61.359).
- (6) See 40 CFR Part 63, Subpart XX (40 CFR 63.1080 – 63.1097).
- (7) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100 – 63.1114).
- (8) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

e) Reporting Requirements

- (1) The permittee shall submit quarterly summaries of the following records:
 - a. all 3-hour blocks of time (when process and/or storage tank emissions are vented to the thermal oxidizer) during which the average combustion temperature within the thermal oxidizer was below the average temperature maintained during the most recent performance test that demonstrated compliance;
 - b. any records of downtime (date and length of time) for the capture (collection) system, the thermal oxidizer, and/or the monitoring equipment when process and/or storage tank emissions are vented to the thermal oxidizer; and
 - c. a log of the operating time for the capture system, thermal oxidizer, monitoring equipment, and when process and/or storage tank emissions are vented to the thermal oxidizer.

These quarterly reports shall be submitted by April 30, July 31, October 31, and January 31, and shall cover the records for the previous calendar quarters.

- (2) The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. Any record which shows the sulfur content of the natural gas exceeded exceed 0.005 gr/dscf; and
 - b. All exceedances of the rolling, 12-month VOC, NO_x, CO, PE/PM₁₀/PM_{2.5} and CO₂e emissions limitations.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (3) See 40 CFR Part 61, Subpart FF (40 CFR 61.340 – 61.359).
- (4) See 40 CFR Part 63, Subpart XX (40 CFR 63.1080 – 63.1097).
- (5) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100 – 63.1114).
- (6) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitations:

VOC emissions from the thermal oxidizer stack shall not exceed 0.01 pounds per hour and 0.02 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitation shall be demonstrated by the testing required in f)(2).

Compliance with the rolling, 12-month emissions limitations shall be demonstrated by the recordkeeping in d)(4).

b. Emissions Limitations:

NO_x emissions shall not exceed 0.098 pound per hour and 0.43 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitation shall be demonstrated by the testing required in f)(2).

Compliance with the rolling, 12-month emissions limitations shall be demonstrated by the recordkeeping in d)(4).

c. Emissions Limitations:

CO emissions shall not exceed 0.082 pound per hour and 0.36 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitation shall be demonstrated by the testing required in f)(2).

Compliance with the rolling, 12-month emissions limitations shall be demonstrated by the recordkeeping in d)(4).

d. Emissions Limitations:

PE and emissions of PM₁₀ and PM_{2.5} shall not exceed 0.008 pound per hour and 0.030 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitation shall be demonstrated by the testing required in f)(2).

Compliance with the rolling, 12-month emissions limitations shall be demonstrated by the recordkeeping in d)(4).

e. Emissions Limitation:

Visible PE from the thermal oxidizer stack shall not exceed five percent opacity, as a six-minute average.

Applicable Compliance Method:

Compliance with this emissions limitation shall be demonstrated by the testing required in f)(2).

f. Emissions Limitation:

CO₂e emissions shall not exceed 513 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the rolling, 12-month emissions limitation shall be demonstrated by the recordkeeping in d)(4).

- (2) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

- a. Emissions testing involving VOC shall be performed within 60 days of achieving the maximum production rate for this emissions unit, but not later than 180 days after initial startup. All other emission testing shall be conducted within 180 days after initial startup of the emissions unit.
- b. The emission testing shall be conducted to demonstrate compliance with the destruction efficiency for VOC, the pounds per hour emissions limitations for VOC, NO_x, CO, PE/PM₁₀/PM_{2.5}, the VE limit and the reduction requirement for total organic HAPs.
- c. The following test methods shall be employed to demonstrate compliance with the allowable emission limitations:
 - i. for NO_x – Methods 1 - 4 and 7 of 40 CFR Part 60, Appendix A;
 - ii. for CO – Methods 1 - 4 and 10 of 40 CFR Part 60, Appendix A;
 - iii. for VOC – Methods 1 - 4 and 18 and 25, as applicable, of 40 CFR Part 60 Appendix A;
 - iv. for PE – Methods 1 – 5 of 40 CFR Part 60 Appendix A;

- v. for PM₁₀/PM_{2.5} – Methods 1-4 of 40 CFR Part 60, Appendix A, and Methods 201, 201A, and 202 of 40 CFR Part 51, Appendix M;
- vi. for opacity – Method 9 of 40 CFR, Part 60, Appendix A. Opacity readings shall be taken during the sampling runs for testing of the allowable emission limitations in f)(1);
- vii. the destruction efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the test methods and procedures specified in 3745-21-10(C)(3), or an alternative test protocol approved by the Ohio EPA. The test methods and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases; and
- viii. the reduction of total organic HAPs shall be determined in accordance with the test methods and procedures specified in 40 CFR 63.116(c), 40 CFR 63.997, 40 CFR 61.355, 40 CFR Part 63, Subpart FFFF, and 40 CFR Part 63, Subpart YY* or an alternative test protocol approved by the Ohio EPA or U.S. EPA.

*Overlap provisions with other regulations within in the subpart may be applied.

Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA. Alternatives of test methods and procedures may involve approval from U.S. EPA based on the delegation of authority outlined within specific regulations.

- d. During the emissions testing, the emissions unit shall be operated under operational conditions approved in advance by the appropriate Ohio EPA District Office or local air agency. Operational conditions that may need to be approved include, but are not limited to, the production rate, the type of material processed, material make-up (solvent content, etc.), or control equipment operational limitations (burner temperature, precipitator voltage, etc.). In general, testing shall be done under “worst case” conditions expected during the life of the permit. As part of the information provided in the “Intent to Test” notification form described below, the permittee shall provide a description of the emissions unit operational conditions they will meet during the emissions testing and describe why they believe “worst case” operating conditions will be met. Prior to conducting the test(s), the permittee shall confirm with the appropriate Ohio EPA District Office or local air agency that the proposed operating conditions constitute “worst case”. Failure to test under the approved conditions may result in Ohio EPA not accepting the test results as a demonstration of compliance.
- e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an “Intent to Test” notification to the appropriate Ohio EPA District Office or local air agency. The “Intent to Test” notification shall describe in detail the proposed test methods and procedures, the emissions unit operating

parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA District Office's or local air agency's refusal to accept the results of the emission test(s).

- f. Personnel from the appropriate Ohio EPA District Office or local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
 - g. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the appropriate Ohio EPA District Office or local air agency.
- (3) See 40 CFR Part 61, Subpart FF (40 CFR 61.340 – 61.359).
 - (4) See 40 CFR Part 63, Subpart XX (40 CFR 63.1080 – 63.1097).
 - (5) See 40 CFR Part 63, Subpart YY (40 CFR 63.1100 – 63.1114).
 - (6) See 40 CFR Part 63, Subpart FFFF (40 CFR 63.2430 – 63.2550).
- g) Miscellaneous Requirements
- (1) None.

12. P807, Fugitive Emissions

Operations, Property and/or Equipment Description:

Facility-wide fugitive emissions from equipment and process unit leaks

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

- (1) None.

- b) Applicable Emissions Limitations and/or Control Requirements

- (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	Best Available Control Technology (BACT) for volatile organic compounds (VOC) – see b)(2)b., b)(2)c. and b)(2)d. BACT for greenhouse gases (GHGs) - see b)(2)e.
b.	ORC 3704.03(T)	Best Available Technology (BAT) for VOC See b)(2)f.
c.	OAC rule 3745-21-09(DD)	Leak detection and repair program for equipment in a process unit that as an intermediate or final product one or more of the organic chemicals identified in Appendix A of OAC rule 3745-21-09. See c)(3), d)(4), e)(3) and f)(2)
d.	40 CFR Part 60, Subpart VVa (40 CFR Part 60.480a – 60.489a) [In accordance with 40 CFR 60.480a, this emissions unit involves equipment in synthetic organic chemicals manufacturing subject to the requirements specified in this section.]	Leak detection and repair for equipment within a process unit that produces chemicals listed in §60.489a [40 CFR 60.482-1a through 60.482-11a] See b)(2)a.
e.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.19)	All of the General Provisions of 40 CFR Part 60, Subpart A are applicable except for the following:

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		§60.8(d) does not apply to 40 CFR Subpart VVa [§60.487a(e)];
f.	40 CFR Part 61, Subpart J (40 CFR 61.110 – 61.112) [In accordance with 40 CFR 61.110, this emissions unit involves fugitive leaks from sources in benzene service]	Equipment leak standards for equipment in benzene service [40 CFR 61.110 through 61.112] See b)(2)a.
h.	40 CFR Part 61, Subpart V (40 CFR 61.240 - 61.247) [In accordance with 40 CFR 61.240, this emissions unit involves fugitive leaks from sources in VHAP service]	Equipment leak standards and repair for volatile hazardous air pollutants (VHAP/Benzene) [§61.242-1 through §61.242-10] Closed vent system(s) and control device requirements [§61.242-11] See b)(2)a.
i.	40 CFR Part 61, Subpart A (40 CFR 61.01 – 61.19)	General Provisions [§61.01 through §61.19]
j.	40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999) Subpart SS provisions are referenced for use by other 40 CFR Part 63 Subparts for air emission control requirements including equipment leak requirements]	Equipment leak requirements and repair for closed vent systems and control devices [40 CFR 63.980 through 63.999] See b)(2)a.
k.	40 CFR Part 63, Subpart UU (40 CFR 63.1019 – 63.1039) [In accordance with 40 CFR 63.1019, this emissions unit involves closed vent systems, control devices and routing of air emissions to a fuel gas system for air emission control subject (by reference of other Part 63 Subparts) to the requirements specified in this section]	Equipment leak standards and repair [40 CFR 63.1021 through 63.1037] See b)(2)a.
l.	40 CFR Part 63, Subpart F (40 CFR 63.100 – 63.107) [In accordance with 40 CFR 63.100(b) this emissions unit is a chemical manufacturing process unit manufacturing as a primary product one of the chemicals listed in "Table	This subpart provides applicability provisions, definitions, and other general provisions that are applicable to 40 CFR Part 63, Subparts G and H [40 CFR 63.100]

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
1 to Subpart F]		
m.	<p>40 CFR Part 63, Subpart H (40 CFR 63.160 – 63.183)</p> <p>[In accordance with 40 CFR 63.160, this emissions unit involves affected equipment that operate in organic hazardous air pollutant service]</p>	<p>Leak detection and repair for affected equipment in organic hazardous air pollutant service [40 CFR 63.160]</p> <p>See b)(2)a.</p>
n.	<p>40 CFR Part 63, Subpart A (40 CFR 63.1-16)</p>	<p>All of the General Provisions of 40 CFR Part 63, Subpart A apply except as indicated:</p> <p>The provisions of §63.1 to §63.16 do not apply to 40 CFR Part 63, Subpart SS and Subpart UU except as noted in referencing subparts [§63.980 and §63.1019]; and</p> <p>Table 4 to Subpart H of 40 CFR Part 63 – Applicable 40 CFR Part 63 General Provisions show which parts of the Provisions in 40 CFR Part 63.1 – 63.16 apply.</p>

(2) Additional Terms and Conditions

- a. The PTTGCA petrochemical complex involves equipment and process units subject to regulations involving fugitive leaks of VOC, HAPs, VHAP/Benzene, and GHGs. The permittee shall develop and implement a program addressing leak standards, leak control, and leak detection and repair in accordance with the requirements specified by the following:
 - i. for VOC:
 - (a) OAC rule 3745-31-10 through 20;
 - (b) ORC 3704.03(T);
 - (c) OAC rule 3745-21-09(DD);
 - (d) 40 CFR Part 60, Subpart VVa*;
 - ii. for HAP:
 - (a) 40 CFR Part 63, Subpart H*;
 - (b) 40 CFR Part 63, Subpart SS*; and

- (c) 40 CFR Part 63, Subpart UU*.
- iii. for VHAP/Benzene:
 - (a) 40 CFR Part 61, Subpart J*; and
 - (b) 40 CFR Part 61, Subpart V*.
- iv. for GHGs:
 - (a) OAC rule 3745-31-10 through 20.

*The requirements of these applicable regulations have been included by using Incorporation by Reference (IBR), see c)(2), d)(3), and e)(2).

- b. The permittee shall employ BACT for fugitive leaks of VOC. BACT has been determined to be the application of enhanced connector monitoring requirements to the most stringent leak detection and repair (LDAR) regulation applicable to affected equipment/process units. The following identifies LDAR requirements for affected equipment/process units which have been determined to representative of BACT:
 - i. 40 CFR Part 63 Subpart UU as applicable to the ethylene manufacturing process with enhanced connector monitoring;
 - ii. 40 CFR Part 60 Subpart VVa as applicable to the polyethylene manufacturing process with enhanced connector monitoring; an
- c. The LDAR programs indicated above which are representative of BACT shall implement the following enhanced connector monitoring requirements:
 - i. connector monitoring subsequent to the initial monitoring required shall be performed on a quarterly basis;
 - ii. if following the initial four (4) consecutive quarters, the percent leaking connectors in a process unit is less than 0.5 percent during the most recent quarterly monitoring event, then the frequency of connector monitoring can be reduced to semi-annual;
 - iii. if following two (2) consecutive semi-annual periods, the percent leaking connectors in a process unit is less than 0.5 percent during the most recent semi-annual monitoring event, then the frequency of connector monitoring can be reduced to annual.
 - iv. If more than or equal to 0.5 percent of the connectors in a process unit are determined to be leaking during any one of the semi-annual or annual monitoring events then the frequency of monitoring shall be returned to a quarterly basis.

- d. BACT for fugitive leaks of VOC also includes an emission limitation not to exceed 99.38 tons per rolling 12-month period from fugitive leaks from all process units and equipment for the entire facility.
- e. The permittee shall employ BACT for fugitive leaks of GHGs. BACT has been determined to be the following:
 - i. an LDAR program for leaks of methane from equipment and piping components in tail gas (fuel gas) and natural gas service. The LDAR program will involve sensory monitoring methods for leaks as outlined in c)(1);
 - ii. methane contained in leaks associated with fugitive VOCs will be minimized by the implementation of BACT for fugitive leaks of VOC.
 - iii. CO₂e emissions from leaks of methane from equipment and piping components in tail gas (fuel gas) and natural gas service at the entire facility shall not exceed 35 tons per rolling 12-month period.
- f. BAT requirements for VOC emissions under ORC 3704.03(T) have been determined to be compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20. It should be noted that emissions of GHG are not subject to BAT under OAC 3745-31-34(E).

c) Operational Restrictions

- (1) The permittee shall develop and implement a LDAR program designed to monitor and repair leaks of methane from equipment and piping components in tail gas (fuel gas) and natural gas service, including connectors, flanges, block valves, control valves, pressure relief valves, pressure gauges, temperature gauges, flow meters, and sample connections. The LDAR program shall include the following elements:
 - a. leaks shall be determined using sensory monitoring consisting of auditory, visual, and olfactory (AVO) walk-through inspections;
 - b. inspections of equipment and piping components in tail gas and natural gas service shall be conducted at a minimum frequency of one (1) time every twenty-four (24) hours to determine if a leak exists;
 - c. the program shall require that the leaking component is repaired as soon as practical but not later than 30 calendar days after the leak is detected;
 - d. the program shall allow for delay of repair of a leaking component if repair is technically infeasible without a shutdown or it is determined that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Repair of the leaking component must be completed by the end of the next shutdown;
 - e. the program shall follow the Monitoring and Record Keeping requirements described in paragraphs d)(1) and d)(2) of this permit.

(2) This permit utilizes incorporation by reference for the following operational restrictions:

- a. See 40 CFR Part 60, Subpart VVa* (40 CFR 60.480a-489a).
- b. See 40 CFR Part 61, Subpart J (40 CFR 61.110 -112).
- c. See 40 CFR Part 61, Subpart V (40 CFR 61.240 -247).
- d. See 40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999).
- e. See 40 CFR Part 63, Subpart UU* (40 CFR 63.1019 -1039).
- f. See 40 CFR Part 63, Subpart H* (40 CFR 63. 63.160 – 183).

*The requirements of these rules shall include the implementation of enhanced connector monitoring as applicable (see b)(2)c.).

(3) This term and condition outlines operational restrictions for a leak detection and repair program developed and implemented in accordance with OAC rule 3745-21-09(DD):

- a. When a leak is detected the following procedures shall be followed:
 - i. a weatherproof identification tag with the equipment identification number and the date shall be immediately attached to the leaking equipment;
 - ii. a record of the leak, the date it was first detected, and any attempt to repair the leak and date is entered into the leak repair log;
 - iii. an identification tag that was attached to a leaking valve “in gas/vapor service” or “in light liquid service” may be removed only after the valve is repaired and found to have no leaks for two consecutive months; and
 - iv. an identification tag attached to leaking equipment that is exempted from the monitoring requirements of OAC 3745-21-09(DD)(2)(b) may be removed immediately following the repair of the leak.
- b. Repair of a leak shall be attempted no later than 5 calendar days after it is detected, where practicable, and shall include, but not limited to, the following best maintenance practices:
 - i. tightening of bonnet bolts;
 - ii. replacement of bonnet bolts;
 - iii. tightening of packing gland nuts; and
 - iv. injection of lubricant into lubricated packing.
- c. Except where meeting one of the conditions defined in OAC 3745-21-09(DD)(11), where a delay in repair is allowed, a leak shall be repaired as soon as practicable, but no later than 15 calendar days after it is detected. Leaking

equipment shall be deemed repaired if the maximum VOC concentration is measured to be less than 10,000 ppmv.

- d. Each compressor shall be equipped with a seal that has a barrier fluid system and sensor which comply with the requirements specified in OAC 3745-21-09(DD)(8), with the following exceptions:
 - i. any compressor designated for "no detectable emissions", and meeting the requirements of OAC 3745-21-09 (DD)(7).
 - ii. any compressors equipped with a closed vent system capable of capturing and transporting any leakage from the compressor seal to control equipment, where the closed vent system and the control equipment comply with the requirements specified in OAC 3745-21-09(DD)(9) and (DD)(10).
 - iii. any reciprocating compressor that meets the following conditions:
 - (a) the compressor was installed prior to May 9, 1986; and
 - (b) the permittee demonstrates, to the satisfaction of the Director, that recasting the compressor distance piece or replacing the compressor are the only options available to bring it into compliance with the requirements to equip it with a seal with a barrier fluid system and sensor.
- e. Except as otherwise provided below, any pressure relief device "in gas/vapor service" in the process unit shall comply with the following requirements:
 - i. Except during pressure releases, the pressure relief device shall be operated with "no detectable emissions", as indicated by an instrument reading of less than 500 ppmv above background, as measured by the method specified in OAC 3745-21-10(F)
 - ii. No later than 5 calendar days after a pressure release, a pressure relief device shall be tested to confirm the condition of "no detectable emissions" in accordance with the method specified in OAC 3745-21-10(F).
 - iii. Except for a delay of repair as provided in OAC 3745-21-09(DD)(11), a pressure relief device shall be returned to a condition of "no detectable emissions" as soon as practicable, but no later than 5 calendar days after a pressure release.

Any pressure relief device that is equipped with a closed vent system capable of capturing and transporting leakage through the pressure relief device to control equipment meeting the requirements specified in OAC 3745-21-09(DD)(9) and (DD)(10) is excluded from these requirements.

- f. With the exception of an "in-situ sampling system" (a non-extractive sampler or an in-line sampler), each sampling connection system in the process unit shall be equipped with a closed purge system or a closed vent system that meets one of the following requirements:
 - i. the purged process fluid is returned directly to the process line with zero VOC emissions to the ambient air;
 - ii. the purged process fluid is collected and recycled with zero VOC emissions to the ambient air; or
 - iii. the closed purge system or closed vent system is designed and operated to capture and transport all the purged process fluid to control equipment that meet the control equipment requirements specified in OAC 3745-21-09(DD)(10).
- g. Each open-ended valve or line in the process unit shall be equipped with a cap, blind flange, plug, or second valve which shall comply with the following requirements:
 - i. Except during operations requiring the flow of process fluid through the open-ended valve or line, the cap, blind flange, plug, or second valve shall seal the open end of the open-ended valve or line.
 - ii. If equipped with a second valve, the open-ended valve or line shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.
 - iii. A bleed valve or line from a double block and bleed system may remain open during operations that require venting the line between the block valves, but the line/valve shall be sealed (as in "i" above) at all other times.
- h. A pump or compressor equipped with a seal that has a barrier fluid system and sensor, which are employed to meet the requirements of OAC 3745-21-09(DD)(2)(d)(ii) for a pump or 3745-21-09(DD)(3)(a) and (b) for a compressor, shall be operated and maintained to comply with the following requirements.
 - i. The barrier fluid system shall meet one of the three following conditions:
 - (a) The barrier fluid system is operated with a barrier fluid at a pressure that is greater, at all times, than the stuffing box pressure of the pump or compressor.
 - (b) The barrier fluid system is equipped with a barrier fluid degassing reservoir that is connected by a closed vent system to control equipment and the closed vent system and control equipment comply with the requirements specified in OAC 3745-21-09(DD)(9) and (DD)(10).

- (c) The barrier fluid system is equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the ambient air.
- ii. The barrier fluid system shall be "in heavy liquid service" or shall not be "in VOC service".
- iii. The barrier fluid system shall be equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both, based on design criteria and operating experience of the permittee.
- i. A delay of the repair of a detected leak or a delay in returning a pressure relief valve/device to a condition of "no detectable emissions" shall be allowed only if complying with the following requirements:
 - i. A delay of repair shall be allowed if the repair is technically infeasible without shutdown of the process unit. However, the repair shall occur before the end of the next process unit shutdown.
 - ii. A delay of repair shall be allowed for a piece of equipment that is isolated from the process and that does not remain "in VOC service" (for example, isolated from the process and properly purged).
 - iii. A delay of repair for a valve shall be allowed if:
 - (a) it can be demonstrated that the emissions from purged material resulting from immediate repair is greater than the emissions likely to result from delay of repair; and
 - (b) the purged material is collected and destroyed or recovered in control equipment that meets the requirements specified in OAC 3745-21-09(DD)(10).
 - iv. A delay of repair for a valve beyond a process unit shutdown shall be allowed if:
 - (a) a valve assembly replacement is necessary during the process unit shutdown, and
 - (b) the valve assembly supplies have been depleted, and
 - (c) valve assembly supplies had been sufficiently stocked before the supplies were depleted.
 - v. A delay of repair beyond the next process unit shutdown shall not be allowed for the valve unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

A delay of repair beyond the next process unit shutdown shall not be allowed for the valve unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

- v. A delay of repair for a pump shall be allowed if:

- (a) the repair requires the use of a dual mechanical seal system and associated barrier fluid system; and
 - (b) the repair is completed as soon as practicable, but no later than 6 months after the leak was detected.
- d) Monitoring and/or Recordkeeping Requirements
- (1) The permittee shall perform AVO walk-through inspections a minimum of one (1) time every twenty-four (24) hours to detect possible leaks of methane from equipment and piping components in tail gas (fuel gas) and natural gas service. Results of the AVO inspections shall be maintained in an operations log and include the following:
 - a. the date and time the inspection was conducted;
 - b. the name of the employee conducting the leak check;
 - c. the identification of any equipment/piping component that was determined to be leaking (company ID and component type (flange, valve, etc.);
 - d. if applicable, reason for any delayed repairs; and
 - e. the date the equipment/piping component was repaired and determined to no longer be leaking.
 - (2) The records associated with the leak detection and repair program shall be maintained for at least 5 years and shall be made available to the Director or his representative upon verbal or written request.
 - (3) This permit utilizes incorporation by reference for the following monitoring and record keeping requirements:
 - a. See 40 CFR Part 60, Subpart VVa* (40 CFR 60.480a-489a).
 - b. See 40 CFR Part 61, Subpart J (40 CFR 61.110 -112).
 - c. See 40 CFR Part 61, Subpart V (40 CFR 61.240 -247).
 - d. See 40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999).
 - e. See 40 CFR Part 63, Subpart UU* (40 CFR 63.1019 -1039).
 - f. See 40 CFR Part 63, Subpart H* (40 CFR 63. 63.160 – 183).
 - (4) This term and condition outlines monitoring and record keeping for a leak detection and repair program developed and implemented in accordance with OAC rule 3745-21-09(DD):

*The requirements of these rules shall include the implementation of enhanced connector monitoring as applicable (see b)(2)c.).

- a. Except as otherwise provided in OAC 3745-21-09(DD)(2)(c) and (DD)(2)(d), equipment shall be monitored for leaks in accordance with the method specified OAC 3745-21-10(F) and as follows:
 - i. Any pump "in light liquid service" shall be monitored monthly.
 - ii. Any valve "in gas/vapor service" or "in light liquid service" shall be monitored monthly, except that quarterly monitoring may be employed where no leaks are detected during two consecutive months. Quarterly monitoring may begin with the next calendar quarter following the two consecutive months of no detected leaks. Monitoring shall be conducted in the first month of each calendar quarter; and quarterly monitoring may continue until a leak is detected, at which time monitoring shall again be employed monthly.
 - iii. The following equipment shall be monitored within 5 calendar days after evidence of a leak or potential leak from the equipment by visual, audible, olfactory, or other detection method:
 - (a) a pump "in heavy liquid service";
 - (b) a valve "in heavy liquid service";
 - (c) a pressure relief device "in light liquid service" or "in heavy liquid service"; and
 - (d) a flange or other connector.
 - iv. Any equipment in which a leak is detected, as defined in OAC 3745-21-09(DD)(2)(g), shall be monitored within 5 working days after each attempt to repair it, unless the equipment was not successfully repaired.
- b. For any valve "in gas/vapor service" or "in light liquid service", an alternative monitoring schedule may be employed, in lieu of the monitoring schedule specified in OAC 3745-21-09(DD)(2)(b)(ii), above, if meeting one of the three following requirements:
 - i. The valve is designated as "difficult to monitor" and is monitored once each calendar year if meeting all of the following conditions:
 - (a) construction of the process unit commenced prior to May 9, 1986;
 - (b) the permittee demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 6 feet above a support surface; and
 - (c) the permittee has a written plan that requires monitoring of the valve at least once per year.

- ii. The valve is designated as "unsafe to monitor" and is monitored as frequently as practical during times when it is safe to monitor, provided the following conditions are met:
 - (a) the permittee demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of monitoring on a monthly basis; and
 - (b) the permittee adheres to a written plan that requires monitoring of the valve as frequently as practical during times when it is safe to monitor.
 - iii. The valve qualifies for an alternative monitoring schedule based on a "skip period" as allowed per OAC 3745-21-09(DD)(12).
- c. The permittee may elect to implement an alternative monitoring schedule, to that of OAC 3745-21-09(DD)(2)(b)(ii) and as identified below, for the process unit valves if the following conditions are met:
- i. no more than 2.0% of the process unit valves are leaking;
 - ii. the permittee notifies the Director (the appropriate district office or local air agency) prior to implementing the alternative monitoring schedule; and such notification identifies:
 - (a) which valves will be subject to the alternative monitoring schedule; and
 - (b) which work practice, identified in OAC 3745-21-09(DD)(12)(e), will be implemented;
 - iii. the permittee monitors the valves initially monthly, to quarterly, as allowed and according to the requirements specified in OAC 3745-21-09(DD)(2)(b)(ii); and
 - iv. the valves continue to meet with the conditions specified in OAC 3745-21-09(DD)(2)(g) to (DD)(2)(m).

If meeting all of the above conditions ("i" through "iv"), one of the following monitoring periods for valve leak detection may be implemented:

- v. after two consecutive quarterly leak detection periods with 2.0% or less of the process unit valves leaking, a monitoring program may begin in which the first quarter of every two consecutive quarterly leak detection periods is skipped; or
- vi. after 5 consecutive quarterly leak detection periods with 2.0% or less of the process unit valves leaking, a monitoring program may begin in which the first three quarters of every four consecutive quarterly periods is skipped.

The alternative monitoring schedule shall be based on skipping quarterly monitoring periods. Any valve "in vacuum service", "in heavy liquid service", or not "in VOC service" shall be excluded from the monitoring schedule. If the percentage of valves leaking from the process unit becomes greater than 2.0%, the permittee shall again comply with the monitoring requirements specified in OAC 3745-21-09(DD)(2)(b)(ii), but may revert to this alternative monitoring schedule after meeting and documenting all of the above requirements.

- d. The percentage of valves leaking, used to qualify for "skipped period" alternative monitoring schedule, shall be determined as the sum of the number of those valves found leaking during any portion of the current monitoring period and the number of those valves found leaking during a previous monitoring period for which repair has been delayed during the current monitoring period, divided by the total number of valves, and multiplied by 100.
- e. The following information shall be recorded in a log, that is kept in a readily accessible location, if the "skipped period" alternative monitoring schedule for leak detection of process unit valves is established:
 - i. the identification numbers of the valves subject to the alternative monitoring schedule;
 - ii. the schedule established for monitoring the subject valves;
 - iii. the valves exempt from the alternative monitoring schedule and reason for the exemption, i.e., "in vacuum service", "in heavy liquid service", or not "in VOC service";
 - iv. the percentage of valves leaking during each monitoring period; and
 - v. the maximum instrument reading and date each valve was monitored.
- f. The permittee may elect to implement an alternative monitoring schedule to that of OAC 3745-21-09(DD)(2)(b)(ii) for the process unit valves, as provided in OAC 3745-21-09 (DD)(2)(d)(v), if the following conditions are met:
 - i. it can be demonstrated that no more than 2.0% of the process unit valves are leaking;
 - ii. the permittee notifies the Director (the appropriate district office or local air agency) prior to implementing the alternative monitoring standard;
 - iii. the demonstration of compliance to document that the percentage of valves leaking does not exceed 2.0% is conducted initially upon implementation and annually thereafter and as follows:
 - (a) all valves subject to the alternative monitoring standard shall be monitored for leaks within a one-week period by the method specified in OAC 3745-21-10(F);

- (b) any leak detected and measured with an instrument reading of 10,000 ppmv or greater shall be recorded as a leak; and
- (c) the percentage of valves leaking shall be determined as the number of valves for which a leak is detected, divided by the number of valves monitored, and multiplied by 100.

All valves "in gas/vapor service" or "in light liquid service" in the process unit shall be subject to this alternative monitoring standard, except for valves not "in VOC service", valves "in vacuum service", and valves which are designated as unsafe to monitor as provided in OAC 3745-21-09(DD)(2)(c)(ii).

- g. When a leak is detected as described above, the leaking valve shall be repaired in accordance with OAC 3745-21-09(DD)(2)(h) and (DD)(2)(i). If the percentage of valves leaking from the process unit becomes greater than 2.0%, the permittee shall again comply with the monitoring requirements specified in OAC 3745-21-09(DD)(2)(b)(ii), but may revert to this alternative monitoring schedule after meeting and documenting all of the above requirements.
- h. The following equipment is excluded from the monitoring requirements of OAC 3745-21-09(DD)(2)(b):
 - i. any pump that has no externally actuated shaft penetrating the pump housing and that is designated for no detectable emissions as provided in OAC 3745-21-09(DD)(7);
 - ii. any pump that is equipped with a dual mechanical seal which has a barrier fluid system and sensor that comply with the requirements specified in OAC 3745-21-09 (DD)(8);
 - iii. any pump that is equipped with a closed vent system capable of capturing and transporting any leakage from the pump seal to control equipment, provided the closed vent system and the control equipment comply with the requirements specified in OAC 3745-21-09(DD)(9) and (DD)(10);
 - iv. any valve that has no externally actuated stem penetrating the valve and that is designated for "no detectable emissions" as provided in OAC 3745-21-09(DD)(7); and
 - v. any valve that qualifies for the alternative monitoring standard based on the percentage of valves leaking, as provided in OAC 3745-21-09(DD)(13).
- i. Any pump "in light liquid service" shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal, unless the pump is equipped with a closed vent system capable of transporting any leakage from the pump seal to control equipment, and the closed vent system and control equipment comply with the requirements specified in OAC 3745-21-09(DD)(9) and (DD)(10).

- j. Any sensor employed pursuant to OAC 3745-21-09(DD)(2)(d)(ii), for a pump equipped with a dual mechanical seal using a barrier fluid system and sensor; or a sensor employed pursuant to OAC 3745-21-09(DD)(3)(b), for a compressor equipped with a seal using a barrier fluid system and sensor; and complying with the requirements specified in OAC 3745-21-09(DD)(8), shall be checked daily, unless the sensor is equipped with an audible alarm.
- k. A leak is detected when:
 - i. a concentration of 10,000 ppmv or greater is measured from a potential leak interface of any equipment, that is monitored for leaks using the method specified in OAC 3745-21-10(F);
 - ii. there is an indication of liquids dripping from the seal of a pump "in light liquid service"; or
 - iii. a sensor employed pursuant to OAC 3745-21-09(DD)(2)(d)(ii) or (DD)(3)(b) indicates failure of the seal system, the barrier fluid system, or both.
- l. When a leak is detected, the following information shall be recorded in the leak repair log:
 - i. the identification number of the leaking equipment;
 - ii. for each leak required to be monitored, the identification numbers of the leak detection instrument and its operator;
 - iii. how the leak was detected, e.g., monitoring, visual inspection, odor detected, or sensor alarm/signal;
 - iv. the date on which the leak was detected and the date of each attempt to repair the leaking equipment;
 - v. the methods of repair applied in each attempt to repair the leak;
 - vi. one of the following entries within 5 working days after each attempt to repair the leaking equipment:
 - (a) "not monitored," denoting the leaking equipment was presumed to still be leaking and it was not monitored; or
 - (b) if the leaking equipment was monitored with a leak detection instrument, the maximum concentration that was measured as follows:
 - (i) the actual reading in ppmv; or
 - (ii) a record stating that the measured concentration was "below 10,000 ppmv"; or

- (iii) a record stating that the measured concentration was "above 10,000 ppmv".
 - vii. if the leak is not repaired within 15 calendar days after the date on which it was detected:
 - (a) a record stating that repair was delayed and the reason for the delay;
 - (b) if repair is being delayed until the next process unit shutdown due to technical infeasibility of repair, the signature of the operator whose decision it was that repair is technically infeasible without a process unit shutdown;
 - (c) the expected date of successful repair of the leak; and
 - (d) the dates of process unit shutdowns that occur while the leaking equipment is unrepairs; and
 - viii. the date on which the leak was successfully repaired.
- m. The leak repair log shall be kept in a readily accessible location and maintained by the operator of the process unit. Each record shall be retained in the log for a minimum of five years following the date on which it was recorded.
- n. The following information shall be recorded for the/each process unit in a log that is kept in a readily accessible location:
- i. a list of identification numbers for equipment subject to the requirements of OAC 3745-21-09(DD)(2) to (DD)(10);
 - ii. a list of identification numbers for equipment designated for "no detectable emissions" as provided in OAC 3745-21-09(DD)(7), and the signature of the permittee/operator authorizing the designation of each piece of equipment;
 - iii. a list of identification numbers for pressure relief devices subject to OAC 3745-21-09(DD)(4);
 - iv. a list of identification numbers for closed vent systems subject to OAC 3745-21-09(DD)(9);
 - v. for compliance tests required under OAC 3745-21-09(DD)(4)(c), (DD)(7)(c), and (DD)(9)(c):
 - (a) the date each compliance test is conducted;
 - (b) the background VOC emissions level measured during each compliance test; and

- (c) the maximum instrument reading measured at the equipment during each compliance test;
- vi. the following information pertaining to valves subject to an alternative monitoring schedule, as provided in OAC 3745-21-09(DD)(2)(c):
 - (a) a list of identification numbers for valves designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve;
 - (b) a list of identification numbers for valves designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the schedule for monitoring each valve; and
 - (c) a list of identification numbers for valves subject to the alternative monitoring schedule based on a "skip period", a schedule for monitoring these valves, and the percentage of valves leaking during each monitoring period;
- vii. the following information pertaining to closed vent systems and control equipment meeting the requirements of OAC 3745-21-09(DD)(9) and (DD)(10):
 - (a) detailed schematics, design specifications, and piping and instrumentation diagrams for the closed vent systems and collection and control equipment;
 - (b) the dates and descriptions of any changes in the design specifications above;
 - (c) a description of the parameter(s) monitored, as required in OAC 3745-21-09(DD)(10)(d), to ensure that the control equipment is operated and maintained in conformance with its design, and the reason for selecting the parameter(s);
 - (d) periods when the closed vent systems and control equipment are not operated as designed, including periods when a flare pilot light does not have a flame; and
 - (e) dates of startups and shutdowns of the closed vent systems and control equipment;
- viii. the following information pertaining to barrier fluid systems and sensors described in OAC 3745-21-09(DD)(8):
 - (a) a list of identification numbers of pumps and compressors equipped with such barrier fluid systems and sensors;

- (b) the criteria that indicate failure of the seal system, the barrier fluid system, or both, as required in OAC 3745-21-09(DD)(8)(d) and an explanation of the criteria; and
- (c) any changes to such criteria and the reasons for the changes;
- ix. the following information for use in determining an exemption for the process unit as provided in OAC 3745-21-09(DD)(17)(a):
 - (a) an analysis demonstrating the design capacity of the process unit;
 - (b) a statement listing the feed and raw materials and products from the process unit and an analysis demonstrating whether these chemicals are heavy liquids or beverage alcohols; or
 - (c) an analysis demonstrating that equipment that is documented as "not in VOC service" meets this condition; and
- x. the following information pertaining to specific equipment that are exempt as provided in OAC 3745-21-09(DD)(17)(b):
 - (a) a list of identification numbers of equipment "in vacuum service";
 - (b) a list of identification numbers of equipment "not in VOC service" and the information or data used to demonstrate this; and
 - (c) a list of equipment subject to an equivalent emission requirement that is approved by the Director pursuant to OAC 3745-21-09 (DD)(16).

One recordkeeping system may be used to comply with the recordkeeping requirements for multiple process units provided the system identifies each process unit to which each record pertains.

- xi. The following facility process units are exempted from the requirements of OAC 3745-21-09(DD)(2) to (DD)(6). Records shall be maintained to identify and document the process unit equipment meeting these requirements:
 - (a) any process unit that has a design capacity to produce less than 1,100 tons per year;
 - (b) any process unit that produces only heavy liquid chemicals from heavy liquid feed or raw materials;
 - (c) any process unit that produces beverage alcohol;
 - (d) any process unit that has no equipment "in VOC service" as determined in accordance with OAC 3745-21-10(O)(2); and

- (e) any process unit at a petroleum refinery, as defined in OAC 3745-21-01(E)(15).
 - o. The following process equipment are exempt from the requirements of OAC 3745-21-09(DD)(2) to (DD)(6). Records shall be maintained to identify and document the process unit equipment meeting these requirements:
 - i. any equipment "not in VOC service", as determined in accordance with OAC 3745-21-10(O)(2);
 - ii. any equipment "in vacuum service"; and
 - iii. any equipment subject to an equivalent emission limitation as provided in OAC 3745-21-09(DD)(16).
 - (5) The permittee can propose an Alternative Work Practice to Ohio EPA for approval to use an optical gas imaging instrument instead of a 40 CFR Part 60, appendix A-7, Method 21 monitor as provided in the General Provisions of 40 CFR Parts 60, 61, and 63 and for fulfilling the requirements of OAC rule 3745-21-09(DD) and additional enhanced connector monitoring required by BACT.
- e) Reporting Requirements
- (1) The permittee shall submit semiannual written reports that identify the following information from data collected by the LDAR program for leaks of methane shall be submitted to the Director by the first day of February and August and shall include the following information for each preceding semiannual period of operations:
 - a. for each AVO walk-through inspection that occurred during the semiannual period, the permittee shall submit the following information from data collected by LDAR program:
 - i. the date of the inspection;
 - ii. the company ID and equipment/piping component type (flange, valve, etc.) of each leaking equipment/piping component;
 - iii. a list of all equipment/ piping components that were not repaired within 30 days after inspection identified the equipment/piping component to be leaking; and
 - iv. a list of all equipment/piping components involving a delay of repair and the reason for the delay.
 - (2) This permit utilizes incorporation by reference for the following reporting requirements:
 - a. See 40 CFR Part 60, Subpart VVa* (40 CFR 60.480a-489a).
 - b. See 40 CFR Part 61, Subpart J (40 CFR 61.110 -112).
 - c. See 40 CFR Part 61, Subpart V (40 CFR 61.240 -247).

- d. See 40 CFR Part 63, Subpart SS (40 CFR 63.980 – 63.999).
- e. See 40 CFR Part 63, Subpart UU* (40 CFR 63.1019 -1039).
- f. See 40 CFR Part 63, Subpart H* (40 CFR 63. 63.160 – 183).

*The requirements of these rules shall include the implementation of enhanced connector monitoring as applicable (see b)(2)c.).

- (3) This term and condition outlines reporting requirements for a leak detection and repair program developed and implemented in accordance with OAC rule 3745-21-09(DD):
 - a. Semiannual reports shall be submitted to the Director by the first day of February and August and shall include the following information for each preceding semiannual period of operations:
 - i. the process unit identification;
 - ii. the number of pumps “in light liquid service” associated with the process unit, excluding:
 - (a) pumps that have no externally actuated shaft penetrating the pump housing and designated for “no detectable emissions”; and
 - (b) pumps equipped with a closed vent system capable of capturing and transporting leakage from the pump seal to control equipment meeting the requirements of OAC 3745-21-09(DD)(9) and (DD)(10);
 - iii. the number of valves “in gas/vapor service” or “in light liquid service” associated with the process unit, excluding:
 - (a) valves that have no externally actuated stem penetrating the valve and designated for “no detectable emission”; and
 - (b) valves qualified for the alternative monitoring standard based on the percentage of valves leaking, under the provision of OAC 3745-21-09(DD)(13);
 - iv. the number of compressors associated with the process unit, excluding:
 - (a) compressors designated for and meeting the requirements for “no detectable emissions”;
 - (b) compressors equipped with a closed vent system capable of capturing and transporting leakage from the compressor seal to control equipment meeting the requirements of OAC 3745-21-09(DD)(9) and (DD)(10); and/or
 - (c) reciprocating compressors installed prior to 5/9/86, where it can be demonstrated that recasting or replacing the compressor would

be the only means of complying with the requirement to equip it with a seal with a barrier fluid system and sensor;

- v. for each month during the semiannual period:
 - (a) the number of pumps “in light liquid service” for which leaks were detected (as required in this permit);
 - (b) the number of pumps “in light liquid service” for which leaks were not repaired within 15 calendar days after the date of leak detection;
 - (c) the number of valves “in gas/vapor service” or “in light liquid service” for which leaks were detected (as required in this permit);
 - (d) the number of valves “in gas/vapor service” or “in light liquid service” for which leaks were not repaired within 15 calendar days after the date of leak detection;
 - (e) the number of compressors for which leaks were detected (as required in this permit);
 - (f) the number of compressors for which leaks were not repaired within 15 calendar days after the date of leak detection; and
 - (g) for each delay of repair allowed pursuant to OAC 3745-21-09(DD)(11), the reason for the delay;
- vi. the dates of process unit shutdowns that occurred within the semiannual period; and
- vii. the results of compliance tests for equipment identified as having “no detectable emissions”, along with the associated equipment identification numbers from the compliance log.

Semiannual reports shall be submitted to the appropriate Ohio EPA district office or local air agency by the first day of February and August and shall include information for the preceding semiannual period.

- b. The permittee shall notify the appropriate Ohio EPA district office or local air agency of the intent-to-test the process control equipment not less than 30 days before the proposed initiation of the testing. The following information shall be included in the notification
 - i. a statement indicating the purpose of the proposed test and the applicable paragraph of OAC 3745-21-09 for which compliance will be demonstrated;
 - ii. a detailed description of the process unit and control device to be tested;

- iii. a detailed description of the test procedures, equipment and sampling sites; and
- iv. a timetable, setting forth the dates on which:
 - (a) the testing will be conducted; and
 - (b) the final test report will be submitted.

The results of such compliance tests shall be reported to the appropriate Ohio EPA district office or local air agency within 30 days following the test date.

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

VOC emissions from fugitive leaks from all process units and equipment at the entire facility shall not exceed 99.38 tons per rolling 12-month period.

Applicable Compliance Method:

Compliance with the annual emission limitation is demonstrated based upon the following calculation:

$$E = \sum_{i=1}^n (C_i) (EFi) \left(1 - \left(\frac{CEi}{100}\right)\right) \left(\frac{8,760 \text{ hrs}}{12 \text{ months}}\right) \left(\frac{\text{Ton}}{907.185 \text{ Kg}}\right)$$

Where:

E = total tons of VOC per rolling 12-month period.

C_i = component type i.

EF_i = VOC* emission factor (in Kg/hr/source) for equipment and service type from U.S. EPA's "Protocol for Equipment Leak Emission Estimates" (EPA-453/R-95-017 - November 1995), Table 2-1, for synthetic organic chemical manufacturing industry (SOCMI).

CE_i = control efficiency (%) for application of LDAR program. Efficiencies based on TCEQ LDAR program 28VHP (TCEQ – Control Efficiencies for TCEQ Leak Detection and Repair Programs, Revised 07/11 (APDB 6129v2)).

8,760 hrs/yr = maximum annual operating schedule in rolling 12-month period.

*Conservatively assumes 100% of the SOCMI emission factors in total organic compounds (TOC) are VOC (e.g. no revision of TOC emissions based on % concentration of VOC).

b. Emission Limitation:

CO₂e emissions from leaks of methane from equipment and piping components in tail gas (fuel gas) and natural gas service at the entire facility shall not exceed 35 tons per rolling 12-month period.

Applicable Compliance Method:

Compliance with the annual emission limitation is demonstrated based upon the following calculation:

$$E = \sum_{i=1}^n (Ci) (EFi) \left(1 - \left(\frac{CEi}{100}\right)\right) \left(\frac{8,760 \text{ hrs}}{12 \text{ months}}\right) \left(\frac{\text{Ton}}{907.185 \text{ Kg}}\right) \quad (25)$$

Where:

E = total tons of CO₂e per rolling 12-month period.

C_i = component type i.

E_{Fi} = VOC* emission factor (in Kg/hr/source) for equipment and service type from U.S. EPA's "Protocol for Equipment Leak Emission Estimates" (EPA-453/R-95-017 - November 1995), Table 2-1, for synthetic organic chemical manufacturing industry (SOCMI).

C_{Ei} = control efficiency (%) for application of LDAR program. Efficiencies based on TCEQ LDAR program 28VHP (TCEQ – Control Efficiencies for TCEQ Leak Detection and Repair Programs, Revised 07/11 (APDB 6129v2)).

8,760 hrs/yr = maximum annual operating schedule in rolling 12-month period.

25 = Global warming potential of methane for calculating CO₂e (40 CFR Part 98, Subpart A, Table A-1).

*Conservatively assumes 100% of the SOCMI emission factors in total organic compounds (TOC) are methane (CH₄).

- (2) This term and condition outlines the testing method for the determination of equipment "in VOC service" and "in light liquid service" for a leak detection and repair program developed and implemented in accordance with OAC rule 3745-21-09(DD):

- a. Any piece of equipment is presumed to be "in VOC service", unless the permittee demonstrates that the piece of equipment is "not in VOC service" according to the following provisions:

- i. The piece of equipment is considered "not in VOC service" if it can be determined that the VOC content of the process fluid, which is contained in or contacts the piece of equipment, can be reasonably expected never to exceed 10% by weight.
 - ii. Procedures that conform to the general methods described in ASTM E168-99(2004), ASTM E169-04, and ASTM E260-73 shall be used to determine the VOC content of a process fluid.
 - iii. The permittee may use engineering judgment rather than the above ASTM methods, where it can be clearly demonstrated that the VOC content of a process fluid does not exceed 10% by weight. In the event the Ohio environmental protection agency or the U.S. EPA has a disagreement with an engineering judgment, the appropriate ASTM method shall be used to resolve the disagreement.
- b. A piece of equipment is "in light liquid service" if it contains or is in contact with a process fluid that meets all of the following conditions:
 - i. The process fluid is a liquid at operating conditions.
 - ii. The vapor pressure of one or more of the pure components within the process fluid is greater than 0.04 pound per square inch at 68 degrees Fahrenheit.
 - iii. The total concentration of the pure components having a vapor pressure greater than 0.04 pound per square inch at 68 degrees Fahrenheit is equal to or greater than 20% by weight.
- Vapor pressures may be obtained from standard reference texts or may be determined by the method in ASTM D2879-70.
- g) Miscellaneous Requirements
- (1) None.

13. J001, Light and Heavy Pygas Railcar Loading

Operations, Property and/or Equipment Description:

Loading of railcars (2 loading arms) with light and heavy pygas controlled by the OSBL thermal oxidizer (P001 or P002).

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:

- (1) b)(1)c., b)(2)e. and b)(2)f.

- b) Applicable Emissions Limitations and/or Control Requirements

- (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20	Best Available Control Technology (BACT) for volatile organic compounds (VOC) See b)(2)a.
b.	OAC rule 3745-31-05(A)(3) June 30, 2008	See b)(2)c. and b)(2)d.
c.	OAC rule 3745-31-05(A)(3)(a)(ii) June 30, 2008	See b)(2)e. and b)(2)f.
d.	OAC rule 3745-21-07	See b)(2)g.
e.	40 CFR Part 60, Subpart VVa (40 CFR Part 60.480a – 60.489a) [In accordance with 40 CFR 60.480a, this emissions unit involves equipment in synthetic organic chemicals manufacturing subject to the requirements specified in this section.]	Leak detection and repair for equipment within a process unit that produces chemicals listed in §60.489a [40 CFR 60.482-1a through 60.482-11a] See b)(2)b.
f.	40 CFR Part 60, Subpart A (40 CFR 60.1 - 60.19)	All of the General Provisions of 40 CFR Part 60, Subpart A are applicable except for the following: §60.8(d) does not apply to 40 CFR Subpart VVa [§60.487a(e)]

(2) Additional Terms and Conditions

- a. BACT requirements for heavy and light pygas railcar loading has been determined to be the following:
 - i. use of thermal oxidizer (TO) achieving a destruction efficiency of >99.5% for VOC emissions.

Note: The TO controlling heavy and light pygas railcar loading operations is permitted as a separate and individual emissions unit (emissions unit P001 or P002). For efficient permitting structure, the applicable operational restrictions, monitoring, record keeping, reporting, and testing associated with TO control are contained within the requirements of emissions unit P001 and P002.

- b. The following regulations establish requirements for component equipment leak control and repair for VOC from the heavy and light pygas railcar loading operations:
 - (a) OAC rule 3745-31-10 through 20; and
 - (b) 40 CFR Part 60, Subpart VVa.

Note: A separate emissions unit (P807) associated with fugitive leaks of VOC, HAP*, VHAP/Benzene*, and GHGs* from all component equipment at the facility subject to the leak control and repair regulations above has been established. For efficient permitting structure, the applicable requirements (limitations, operational restrictions, monitoring, record keeping, reporting, and testing) associated with equipment leak control and repair for VOC, HAP*, VHAP/Benzene*, and GHGs* are contained within the requirements of emissions unit P807.

*It should be noted that heavy and light pygas railcar loading operations are not subject to regulations for HAP under 40 CFR Part 63, VHAP/Benzene under 40 CFR Part 61 or GHGs under OAC rule 3745-31-10 through 20.

- c. BAT requirements for VOC under OAC rule 3745-31-05(A)(3) have been determined to be compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
- d. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- e. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to emissions of VOC from this air contaminant source since the potential to emit is less than 10 tons/year (taking into account the federally enforceable BACT requirements when applicable).

- f. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- g. This emissions unit is not subject to OAC rule 3745-21-07 in accordance with OAC rule 3745-21-07(M)(3)(c).

c) Operational Restrictions

- (1) This permit utilizes incorporation by reference for the following operational restrictions:
 - a. See 40 CFR Part 60, Subpart VVa* (40 CFR 60.480a-489a).

*Operational restrictions associated with leak control and repair for heavy and light pygas railcar loading are contained within the requirements of emissions unit P807.

d) Monitoring and/or Recordkeeping Requirements

- (1) This permit utilizes incorporation by reference for the following monitoring and record keeping requirements:
 - a. See 40 CFR Part 60, Subpart VVa* (40 CFR 60.480a-489a).

*Monitoring and record keeping associated with leak control and repair for heavy and light pygas railcar loading are contained within the requirements of emissions unit P807.

- (2) This permit utilizes incorporation by reference for the following reporting requirements:

- a. See 40 CFR Part 60, Subpart VVa* (40 CFR 60.480a-489a).

*Reporting requirements associated with leak control and repair for heavy and light pygas railcar loading are contained within the requirements of emissions unit P807.

e) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

- a. Emissions Limitation:

Use of TO achieving a destruction efficiency of >99.5% for VOC emissions.

Applicable Compliance Method:

Refer to emissions unit P001 and P002 for applicable compliance methods for the above emission limitation.

f) Miscellaneous Requirements

- (1) None.

14. P901, HDPE Railcar Loading 1

Operations, Property and/or Equipment Description:

Railcar loading of high-density polyethylene (HDPE) pellets controlled with baghouse

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

- (1) b)(1)c., b)(2)d. and b)(2)e.

- b) Applicable Emissions Limitations and/or Control Requirements

- (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20	Best Available Control Technology (BACT) for particulate matter 10 microns or less in size (PM ₁₀) and particulate matter 2.5 microns or less in size (PM _{2.5}) See b)(2)a.
b.	OAC rule 3745-31-05(A)(3) June 30, 2008	See b)(2)b. and b)(2)c.
c.	OAC rule 3745-31-05(A)(3)(a)(ii) June 30, 2008	See b)(2)d. and b)(2)e.
d.	OAC rule 3745-17-11(B)(1)	See b)(2)f.
e.	OAC rule 3745-17-07(A)	See b)(2)f.

The HDPE and LLDPE/HDPE railcar loading operations (emissions unit P901 & P902) share a pellet cleaning package operation (filter vent PE-RPC). Limitations and requirements for the pellet cleaning package operation are contained within the terms and conditions below and are also contained in the terms and conditions of emissions unit P902).

(2) Additional Terms and Conditions

- a. BACT requirements for high density polyethylene (HDPE) pellet railcar loading for PM₁₀/PM_{2.5}* emissions has been determined to be the following:

- i. use of fabric filtration control for achieving a maximum outlet concentration of 0.002 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations (for PM₁₀/PM_{2.5}) for the following process loading vents:

- (a) PE Railcar Loading Bin (PE1-21):

- (i) 0.018 lb/hr and 0.081ton per rolling 12-month period.

- (b) PE Railcar Loading Bin (PE2-21):

- (i) 0.018 lb/hr and 0.081 ton per rolling 12-month period.
- (c) PE Railcar Loading (PE1-22):
 - (i) 0.0002 lb/hr and 0.0009 ton per rolling 12-month period.
- (d) PE Railcar Loading (PE2-22):
 - (i) 0.0002 lb/hr and 0.0009 ton per rolling 12-month period.
- ii. a maximum outlet concentration of 0.002 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations (for PM₁₀/PM_{2.5}) for the following process loading vents:
 - (a) PE Pellet Elutriator & Cyclone Separator (PE1-20):
 - (i) 0.018 lb/hr and 0.081 ton per rolling 12-month period.
 - (b) PE Pellet Elutriator & Cyclone Separator (PE2-20):
 - (i) 0.018 lb/hr and 0.081 ton per rolling 12-month period.
- iii. use of fabric filtration control for achieving a maximum outlet concentration of 0.001 gr/dscf for PM₁₀, 0.0005 gr/dscf for PM_{2.5} and the lb/hr and rolling 12-month limitations (for PM₁₀ and PM_{2.5}) for the pellet cleaning package vent (PE-RPC):
 - (a) PM₁₀: 0.009 lb/hr and 0.038 ton per rolling 12-month period;
 - (b) PM_{2.5}: 0.004 lb/hr and 0.019 ton per rolling 12-month period.
- iv. visible particulate emissions from the stacks for this emissions unit identified in b)(2)a. shall not exceed five percent opacity, as a six-minute average.

*All emissions of particulate matter are PM₁₀/PM_{2.5} and the emission rates of PM₁₀ and PM_{2.5} are considered equivalent for permitting purposes.

- b. BAT requirements for PM₁₀ and PM_{2.5} under OAC rule 3745-31-05(A)(3) have been determined to be compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
- c. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- d. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to emissions of PM₁₀/PM_{2.5}, from this air contaminant source since the potential to emit is less than 10 tons/year (taking into account the federally enforceable BACT requirements when applicable). It should be noted that emissions of PE are not subject to BAT under OAC rule 3745-31-05(A)(3).

- e. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
 - f. The emission limitation specified by this rule is less stringent than BACT requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
- c) Operational Restrictions
- (1) None.
- d) Monitoring and/or Recordkeeping Requirements
- (2) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks for this emissions unit identified in b)(2)a. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emissions incident; and
 - e. any corrective actions taken to eliminate the visible emissions.
- e) Reporting Requirements
- (1) The permittee shall submit semiannual written reports that identify:
 - a. all days during which any visible particulate emissions were observed from the stacks for this emissions unit identified in b)(2)a.; and
 - b. any corrective actions taken to minimize or eliminate the visible particulate emissions.
- These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.
- f) Testing Requirements
- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitations:

PM₁₀/PM_{2.5} emission limitations of 0.002 gr/dscf and the lb/hr and tons per rolling 12-month period limitations (for PM₁₀/PM_{2.5}) indicated for the following process loading vents: .

- (a) PE Pellet Elutriator & Cyclone Separator (PE1-20):
 - (i) 0.018 lb/hr and 0.081 ton per rolling 12-month period.
- (b) PE Pellet Elutriator & Cyclone Separator (PE2-20):
 - (i) 0.018 lb/hr and 0.081 ton per rolling 12-month period.
- (c) PE Railcar Loading Bin (PE1-21):
 - (i) 0.018 lb/hr and 0.081 ton per rolling 12-month period.
- (d) PE Railcar Loading Bin (PE2-21):
 - (i) 0.018 lb/hr and 0.081 ton per rolling 12-month period.
- (e) PE Railcar Loading (PE1-22):
 - (i) 0.0002 lb/hr and 0.0009 ton per rolling 12-month period.
- (f) PE Railcar Loading (PE2-22):
 - (i) 0.0002 lb/hr and 0.0009 ton per rolling 12-month period.

Applicable Compliance Method:

The 0.002 gr/dscf was established in accordance with BACT requirements as the maximum outlet concentration standard for the application of fabric filtration control.

The maximum outlet concentration 0.002 gr PM₁₀/PM_{2.5}/dscf for the elutriator & cyclone separator vents was established in accordance with BACT requirements.

The lb/hr limitations were established by multiplying the emission limitation of 0.002 gr/dscf by the following maximum volumetric air flow rates in cubic feet per hour (cfh)and multiplying by lb/7,000 gr. The tons per rolling 12-month period limitations were established by multiplying the lb/hr emission limits by 8760 hrs/yr and multiplying by ton/2000 lb:

- (a) PE Pellet Elutriator & Cyclone Separator (PE1-20):
 - (i) 64,474 cfh
- (b) PE Pellet Elutriator & Cyclone Separator (PE2-20):
 - (i) 64,474cfh

- (c) PE Railcar Loading Bin (PE1-21):
 - (i) 64,474 cfh
- (d) PE Railcar Loading Bin (PE2-21):
 - (i) 64,474 cfh
- (e) PE Railcar Loading (PE1-22):
 - (i) 842 cfh
- (f) PE Railcar Loading (PE2-22):
 - (i) 842 cfh

Maximum hourly volumetric air flows are based on a pellet-to-air ratio of 10 lb/lb (766 lb/lb for PE1-22 & PE2-22) and a maximum pellet loading rates of 100 metric tons per hour. If required, the permittee shall demonstrate compliance with the gr/dscf and lb/hr limitations in accordance with Methods 1-4 of 40 CFR Part 60, Appendix A and Methods 201, 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

Maximum annual volumetric air flows are based on a pellet-to-air ratio of 10 lb/lb (766 lb/lb for PE1-22 & PE2-22) and a maximum pellet loading rate of 350,000 metric tons per year. Therefore, provided compliance is shown with the 0.002 gr/dscf limitation, compliance with the rolling 12-month limitations shall also be demonstrated.

b. Emissions Limitation:

Limitations of 0.001 gr/dscf for PM₁₀, 0.0005 gr/dscf for PM_{2.5} and the lb/hr and rolling 12-month limitations (for PM₁₀ and PM_{2.5}) for the pellet cleaning package vent (PE-RPC):

- (a) PM₁₀: 0.009 lb/hr and 0.038 ton per rolling 12-month period;
- (b) PM_{2.5}: 0.004 lb/hr and 0.019 ton per rolling 12-month period.

Applicable Compliance Method:

The 0.001 gr/dscf for PM₁₀ and 0.0005 gr/dscf for PM_{2.5} were established in accordance with BACT requirements as the maximum outlet concentration standards for the application of fabric filtration control.

The lb/hr limitations were established by multiplying the emission limitation of 0.005 gr/dscf or 0.01 gr/dscf by the following maximum volumetric air flow rates (cfm) and multiplying by lb/7,000 gr and 60 min/hr:

The lb/hr limitations were established by multiplying the emission limitation of 0.001 gr/dscf for PM₁₀ and 0.0005 gr/dscf for PM_{2.5} by a maximum volumetric air flow rate of 60,000 cubic feet per hour and multiplying by lb/7,000 gr.

If required, the permittee shall demonstrate compliance with the gr/dscf and lb/hr limitations in accordance with Methods 1-4 of 40 CFR Part 60, Appendix A and Methods 201, 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The tons per rolling 12-month period limitations were established by multiplying the lb/hr limitations by a maximum operating schedule of 8,760 hours per year and dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr limitations, compliance with the rolling 12-month limitations shall also be demonstrated.

c. Emissions Limitation:

Visible particulate emissions from the stacks for this emissions unit identified in b)(2)a. shall not exceed five percent opacity, as a six-minute average.

Applicable Compliance Method:

If required, compliance shall be demonstrated using Test Method 9 as set forth in "Appendix on Test Methods" in 40 CFR, Part 60 ("Standards of Performance for New Stationary Sources").

g) Miscellaneous Requirements

- (1) None.

15. P902, HDPE Railcar Loading 2

Operations, Property and/or Equipment Description:

Railcar loading of linear low-density polyethylene/high density polyethylene (LLDPE/HDPE) pellets controlled with baghouse. Loading operations include pellet cleaning package process.

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

- (1) b)(1)c., b)(2)d. and b)(2)e.

- b) Applicable Emissions Limitations and/or Control Requirements

- (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20	Best Available Control Technology (BACT) for particulate matter 10 microns or less in size (PM ₁₀) and particulate matter 2.5 microns or less in size (PM _{2.5}) See b)(2)a.
b.	OAC rule 3745-31-05(A)(3) June 30, 2008	See b)(2)b. and b)(2)c.
c.	OAC rule 3745-31-05(A)(3)(a)(ii) June 30, 2008	See b)(2)d. and b)(2)e.
d.	OAC rule 3745-17-11(B)(1)	See b)(2)f.
e.	OAC rule 3745-17-07(A)	See b)(2)f.

The HDPE and LLDPE/HDPE railcar loading operations (emissions unit P901 & P902) share a pellet cleaning package operation (filter vent PE-RPC). Limitations and requirements for the pellet cleaning package operation are contained within the terms and conditions below and are also contained in the terms and conditions of emissions unit P901.

- (2) Additional Terms and Conditions

- a. BACT requirements for linear low-density polyethylene high density polyethylene (LLDPE/HDPE) pellet railcar loading for PM₁₀/PM_{2.5}* emissions has been determined to be the following:

- i. use of fabric filtration control for achieving a maximum outlet concentration of 0.002 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations for (for PM₁₀/PM_{2.5}) the following process loading vents:

- (a) PE Railcar Loading Bin (PE3-17):

- (i) 0.024 lb/hr and 0.0104 ton per rolling 12-month period.

- (b) PE Railcar Loading Bin (PE4-17):
 - (i) 0.024 lb/hr and 0.104 ton per rolling 12-month period.
 - (c) PE Railcar Loading (PE3-18):
 - (i) 0.0003 lb/hr and 0.0013 ton per rolling 12-month period.
 - (d) PE Railcar Loading (PE4-18):
 - (i) 0.003 lb/hr and 0.0013 ton per rolling 12-month period.
- ii. a maximum outlet concentration of 0.002 gr/dscf for PM₁₀/PM_{2.5} and the lb/hr and rolling 12-month limitations (for PM₁₀/PM_{2.5}) for the following process loading vents:
- (a) PE Pellet Elutriator & Cyclone Separator (PE3-16):
 - (i) 0.024 lb/hr and 0.104 ton per rolling 12-month period.
 - (b) PE Pellet Elutriator & Cyclone Separator (PE4-16):
 - (i) 0.024 lb/hr and 0.104 ton per rolling 12-month period.
- *All emissions of particulate matter are PM₁₀/PM_{2.5} and the emission rates of PM₁₀ and PM_{2.5} from railcar process loading vents are considered equivalent for permitting purposes.
- iii. use of fabric filtration control for achieving a maximum outlet concentration of 0.001 gr/dscf for PM₁₀, 0.0005 gr/dscf for PM_{2.5} and the lb/hr and rolling 12-month limitations (for PM₁₀ and PM_{2.5}) for the pellet cleaning package vent (PE-RPC):
- (a) PM₁₀: 0.009 lb/hr and 0.038 ton per rolling 12-month period;
 - (b) PM_{2.5}: 0.004 lb/hr and 0.019 ton per rolling 12-month period.
- iv. visible particulate emissions from the stacks for this emissions unit identified in b)(2)a. shall not exceed five percent opacity, as a six-minute average.
- b. BAT requirements for PM₁₀ and PM_{2.5} under OAC rule 3745-31-05(A)(3) have been determined to be compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
- c. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- d. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to emissions of PM₁₀/PM_{2.5}, from this air contaminant source since the potential to

emit is less than 10 tons/year (taking into account the federally enforceable BACT requirements when applicable). It should be noted that emissions of PE are not subject to BAT under OAC rule 3745-31-05(A)(3).

- e. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- f. The emission limitation specified by this rule is less stringent than BACT requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.

c) Operational Restrictions

- (1) None.

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks for this emissions unit identified in b)(2)a. The presence or absence of any visible emissions for each individual stack shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emissions incident; and
 - e. any corrective actions taken to eliminate the visible emissions.

e) Reporting Requirements

- (1) The permittee shall submit semiannual written reports that identify:
 - a. all days during which any visible particulate emissions were observed from the stack(s) for this emissions unit identified in b)(2)a.; and
 - b. any corrective actions taken to minimize or eliminate the visible particulate emissions.

These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitations:

- i. PM₁₀/PM_{2.5} emission limitations of 0.002 gr/dscf and the lb/hr and rolling 12-month limitations for (for PM₁₀/PM_{2.5}) the following process loading vents:
 - (a) PE Pellet Elutriator & Cyclone Separator (PE3-16):
 - (i) 0.024 lb/hr and 0.104 ton per rolling 12-month period.
 - (b) PE Pellet Elutriator & Cyclone Separator (PE4-16):
 - (i) 0.024 lb/hr and 0.104 ton per rolling 12-month period.
 - (c) PE Railcar Loading Bin (PE3-17):
 - (i) 0.024 lb/hr and 0.104 ton per rolling 12-month period.
 - (d) PE Railcar Loading Bin (PE4-17):
 - (i) 0.024 lb/hr and 0.104 ton per rolling 12-month period.
 - (e) PE Railcar Loading (PE3-18):
 - (i) 0.0003 lb/hr and 0.0013 ton per rolling 12-month period.
 - (f) PE Railcar Loading (PE4-18):
 - (i) 0.0003 lb/hr and 0.0013 ton per rolling 12-month period.

Applicable Compliance Method:

The 0.002 gr/dscf was established in accordance with BACT requirements as the maximum outlet concentration standard for the application of fabric filtration control.

The maximum outlet concentration 0.002 gr PM₁₀/PM_{2.5}/dscf for the elutriator & cyclone separator vents was established in accordance with BACT requirements.

The lb/hr limitations were established by multiplying the emission limitation of 0.002 gr/dscf by the maximum volumetric air flow rates in cubic feet per hour (cfh). The tons per rolling 12 month period limitations were established by multiplying the lb/hr emission limits by 8769 hrs/yr and multiplying by ton/2000 lb::

- (a) PE Pellet Elutriator & Cyclone Separator (PE3-16):
 - (i) 82,895 cfh
- (b) PE Pellet Elutriator & Cyclone Separator (PE4-16):
 - (i) 82,895 cfh
- (c) PE Railcar Loading Bin (PE3-17):
 - (i) 82,895 cfh
- (d) PE Railcar Loading Bin (PE4-17):
 - (i) 82,895 cfh
- (e) PE Railcar Loading (PE3-18):
 - (i) 1,082 cfh
- (f) PE Railcar Loading (PE4-18):
 - (i) 1,082 cfh

Maximum hourly volumetric air flows are based on a pellet-to-air ratio 10 lb/lb (766 lb/lb for PE3-18 & PE4-18) and a maximum pellet loading rates of 136.4 metric tons per hour. If required, the permittee shall demonstrate compliance with the gr/dscf and lb/hr limitations in accordance with Methods 1-4 of 40 CFR Part 60, Appendix A and Methods 201, 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

Maximum annual volumetric air flows are based on a pellet-to-air ratio of 10 lb/lb (766 lb/lb for PE3-18 & PE4-18) and a maximum pellet loading rate of 450,000 metric tons per year. Therefore, provided compliance is shown with the 0.002 gr/dscf limitation, compliance with the rolling 12-month limitations shall also be demonstrated.

b. Emissions Limitation:

Limitations of 0.001 gr/dscf for PM₁₀, 0.0005 gr/dscf for PM_{2.5} and the lb/hr and rolling 12-month limitations (for PM₁₀ and PM_{2.5}) for the pellet cleaning package vent (PE-RPC):

- (a) PM₁₀: 0.009 lb/hr and 0.038 ton per rolling 12-month period;
- (b) PM_{2.5}: 0.004 lb/hr and 0.019 ton per rolling 12-month period.

Applicable Compliance Method:

The 0.001 gr/dscf for PM₁₀ and 0.0005 gr/dscf for PM_{2.5} were established in accordance with BACT requirements as the maximum outlet concentration standards for the application of fabric filtration control.

The lb/hr limitations were established by multiplying the emission limitation of 0.005 gr/dscf or 0.01 gr/dscf by the following maximum volumetric air flow rates (cfm) and multiplying by lb/7,000 gr and 60 min/hr:

The lb/hr limitations were established by multiplying the emission limitation of 0.001 gr/dscf for PM₁₀ and 0.0005 gr/dscf for PM_{2.5} by a maximum volumetric air flow rate of 60,000 cubic feet per hour and multiplying by lb/7,000 gr.

If required, the permittee shall demonstrate compliance with the gr/dscf and lb/hr limitations in accordance with Methods 1-4 of 40 CFR Part 60, Appendix A and Methods 201, 201A and 202 of 40 CFR Part 51, Appendix M. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

The tons per rolling 12-month period limitations were established by multiplying the lb/hr limitations by a maximum operating schedule of 8,760 hours per year and dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr limitations, compliance with the rolling 12-month limitations shall also be demonstrated.

c. Emissions Limitation:

Visible particulate emissions from the stacks for this emissions unit identified in b)(2)a. shall not exceed five percent opacity, as a six-minute average.

Applicable Compliance Method:

If required, compliance shall be demonstrated using Test Method 9 as set forth in "Appendix on Test Methods" in 40 CFR, Part 60 ("Standards of Performance for New Stationary Sources").

g) Miscellaneous Requirements

- (1) None.

16. F001, Facility Roadways

Operations, Property and/or Equipment Description:

Facility roadways and parking areas; maximum of 182,865 annual vehicle miles traveled

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (1) b)(1)c. and b)(2)c.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20	<p>Fugitive particulate emissions (PE) shall not exceed 1.88 tons per rolling, 12-month period.</p> <p>Fugitive emissions of particulate matter less than 10 microns (PM_{10}) shall not exceed 0.38 ton per rolling, 12-month period.</p> <p>Fugitive emissions of particulate matter less than 2.5 microns ($PM_{2.5}$) shall not exceed 0.09 ton per rolling, 12-month period.</p> <p>No visible PE from any paved roadway or parking area except for a period of time not to exceed one minute during any 60-minute observation period.</p> <p>See b)(2)a. below.</p>
b.	OAC rule 3745-31-05(A)(3), as effective 6/30/08	<p>The requirements of this rule are equivalent to the requirements established pursuant to OAC rules 3745-31-10 through 3745-31-20.</p> <p>See b)(2)b. below.</p>
c.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 6/30/08	<p>The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A) do not apply to the PE and</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		emissions of PM ₁₀ and PM _{2.5} from this source since the potential to emit is less than 10 tons/year. See b)(2)c. below.
d.	OAC rules 3745-17-07(B) and 3745-17-08(B)	The requirements of these rules are less stringent than or equivalent to the emission limitations and control requirements specified in OAC rules 3745-31-10 through 3745-31-20.

(2) Additional Terms and Conditions

- a. As part of the BACT determination for fugitive PE, the permittee shall:
 - i. Pave all in-plant haul roads and parking areas;
 - ii. Implement best management practices including posting and limiting vehicle speeds to 20 miles per hour and water spraying or sweeping as needed based on the daily inspections conducted in accordance with d)(1); and
 - iii. Comply with the visible PE limitation in b)(1)a. above.

Compliance with this limitation shall be demonstrated by the monitoring and recordkeeping required in d)(1)-(3).

- b. This Best Available Technology (BAT) emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- c. This rule applies once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.

c) Operational Restrictions

- (1) None.

d) Monitoring and/or Recordkeeping Requirements

- (1) Except as otherwise provided in this section, the permittee shall perform inspections of each of the in-plant haul roads and parking areas in accordance with the following frequencies:

paved in plant haul roadways and parking areas minimum inspection frequency

all in plant roads and parking areas daily

- (2) The purpose of the inspections is to determine the need for implementing the control measures in b)(2)a. above. The inspections shall be performed during representative, normal traffic conditions. No inspection shall be necessary for an in-plant haul road or parking area that is covered with snow and/or ice or if precipitation has occurred that is sufficient for that day to ensure compliance with the above-mentioned applicable requirements. Any required inspection that is not performed due to any of the above-identified events shall be performed as soon as such event(s) has (have) ended.
- (3) The permittee shall maintain records of the following information:
 - a. the date and reason any required inspection was not performed, including those inspections that were not performed due to snow and/or ice cover or precipitation;
 - b. the date of each inspection where it was determined by the permittee that it was necessary to implement the control measures;
 - c. the dates the control measures were implemented; and
 - d. on a calendar quarter basis, the total number of days the control measures were implemented and the total number of days where snow and/or ice cover or precipitation were sufficient to not require the control measures.

The information required in d)(3)d. shall be updated on a calendar quarter basis within 30 days after the end of each calendar quarter.

e) Reporting Requirements

- (1) The permittee shall submit deviation reports that identify any of the following occurrences:
 - a. each day during which an inspection was not performed by the required frequency, excluding an inspection which was not performed due to an exemption for snow and/or ice cover or precipitation; and
 - b. each instance when a control measure, that was to be implemented as a result of an inspection, was not implemented.

The deviation reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitation:

Fugitive PE shall not exceed 1.88 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance with annual emissions limitation shall be determined based on the emission factor calculations for paved roadways and parking areas in AP-42 Section 13.2.1 (1/11) and a maximum of 182,865 annual vehicle miles traveled as demonstrated by the following equation:

$$EF = ((k * (sL)^{0.91} * (W)^{1.02})) * (1 - P / (4 * 365))$$

Where:

EF = particulate emission factor (lb/VMT)

k = particle size multiplier (lb/VMT) = 0.011

sL = road surface silt loading (g/m²) = 0.2

W = mean vehicle weight (tons) = 8.65

P = number of rain days per year >0.01 in. = 150

Therefore, EF = 0.0206 lb/VMT

Maximum travel = 182,865 VMT/year

(182,865 VMT/year)(0.0206 lb/VMT)(1 ton/2,000 lbs) = 1.88 tons PE per rolling, 12- month period

b. Emissions Limitation:

Fugitive PM₁₀ emissions shall not exceed 0.38 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with annual emissions limitation shall be determined based on the emission factor calculations for paved roadways and parking areas in AP-42 Section 13.2.1 (1/11) and a maximum of 182,865 annual vehicle miles traveled as demonstrated by the following equation:

$$EF = ((k * (sL)^{0.91} * (W)^{1.02})) * (1 - P / (4 * 365))$$

Where:

EF = particulate emission factor (lb/VMT)

k = particle size multiplier (lb/VMT) = 0.0022

sL = road surface silt loading (g/m²) = 0.2

W = mean vehicle weight (tons) = 8.65

P = number of rain days per year >0.01 in. = 150

Therefore, EF = 0.0041 lb/VMT

Maximum travel = 182,865 VMT/year

(182,865 VMT/year)(0.0041 lb/VMT)(1 ton/2,000 lbs) = 0.38 ton PM₁₀ per rolling, 12-month period

c. Emissions Limitation:

Fugitive PM_{2.5} emissions shall not exceed 0.09 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with annual emissions limitation shall be determined based on the emission factor calculations for paved roadways and parking areas in AP-42 Section 13.2.1 (1/11) and a maximum of 182,865 annual vehicle miles traveled as demonstrated by the following equation:

$$EF = ((k^*(sL)^{0.91} \times (W)^{1.02}) \times (1-P/(4 \times 365)))$$

Where:

EF = particulate emission factor (lb/VMT)

k = particle size multiplier (lb/VMT) = 0.00054

sL = road surface silt loading (g/m²) = 0.2

W = mean vehicle weight (tons) = 8.65

P = number of rain days per year >0.01 in. = 150

Therefore, EF = 0.0010 lb/VMT

Maximum travel = 182,865 VMT/year

(182,865 VMT/year)(0.0010 lb/VMT)(1 ton/2,000 lbs) = 0.09 ton PM_{2.5} per rolling, 12-month period.

d. Emissions Limitation:

No visible PE from any paved roadway or parking area except for a period of time not to exceed one minute during any 60-minute observation period.

Applicable Compliance Method:

If required, visible PE shall be determined according to USEPA Method 22.

g) Miscellaneous Requirements

- (1) None.

17. Emissions Unit Group - Firewater Pumps: P005 and P006

EU ID	Operations, Property and/or Equipment Description
P005	Firewater Pump 1 (5PK-5302A); 300 kW (402 HP) emergency diesel-fired firewater pump engine
P006	Firewater Pump 2 (5PK-5302B); 300 kW (402 HP) emergency diesel-fired firewater pump engine

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:
 - (1) b)(1)c. and b)(2)d.
- b) Applicable Emissions Limitations and/or Control Requirements
 - (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	<p>Non-methane hydrocarbon plus nitrogen oxides (NMHC + NO_x) emissions shall not exceed 4.0 g/kW-hour (3.0 g/HP-hour), 2.64 pounds per hour and 0.13 ton per rolling, 12-month period.</p> <p>Carbon monoxide (CO) emissions shall not exceed 3.5 g/kW-hour (2.6 g/HP-hour), 2.31 pounds per hour and 0.12 ton per rolling, 12-month period.</p> <p>Particulate emissions (PE), emissions of particulate matter less than 10 microns (PM₁₀) and emissions of particulate matter less than 2.5 microns (PM_{2.5}) shall not exceed 0.20 g/kW-hour (0.15 g/HP-hour), 0.13 pound per hour and 0.0066 ton per rolling, 12-month period.</p> <p>Carbon dioxide equivalent (CO₂e) emissions shall not exceed 23.0 tons per rolling, 12-month period.</p> <p>See b)(2)a.-b. below.</p>
b.	OAC rule 3745-31-05(A)(3), as effective 6/30/08	The emissions limitations for NO _x , CO, VOC (NMHC) and PE/PM ₁₀ /PM _{2.5}

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>required by this rule are equivalent to the emissions limitations for NO_x, CO, VOC and PE/PM₁₀/PM_{2.5} established pursuant to OAC rules 3745-31-10 through 3745-31-20.</p> <p>Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO_{2e} emissions from this air contaminant source pursuant to OAC rule 3745-31-34(E)(8).</p> <p>See b)(2)c. and c)(1) below.</p>
c.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 6/30/08	<p>BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the NO_x, VOC (NMHC), CO and PE/PM₁₀/PM_{2.5} emissions from this air contaminant source since the calculated annual emission rates are less than 10 tons/year taking into account the federally enforceable limits in OAC rules 3745-31-10 through 20 and 40 CFR Part 60, Subpart IIII.</p> <p>BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the SO₂ emissions from this air contaminant source since the potential to emit of SO₂ is less than 10 tons/year.</p> <p>See b)(2)d. below.</p>
d.	OAC rule 3745-17-07(A)	Visible PE from any stack serving this emissions unit shall not exceed 20 percent opacity as a six-minute average, except as provided by rule.
e.	OAC rule 3745-17-11(B)	The emission limitation required by this rule is less stringent than the emissions limitation for PE established pursuant to OAC rules 3745-31-10 through 20.
f.	OAC rule 3745-18-06	This emissions unit is exempt from the requirements of OAC rule 3745-18-06(G) pursuant to OAC rule 3745-18-06(B).
g.	40 CFR 60, Subpart IIII (40 CFR 60.4200 – 4219) [In accordance with 40 CFR	The requirements of this rule are equivalent to the requirements of OAC rules 3745-31-10 through 20.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	60.4200(a)(2)(ii) and 60.4205(c), this emissions unit is a 300 kW (402 HP) fire pump compression ignition (CI) internal combustion engine (ICE) manufactured after July 1, 2006 with a displacement of less than 30 liters per cylinder subject to the emissions limitations/control measures specified in this section.]	[40 CFR 60.4205(c) and Table 4 to 40 CFR Part 60, Subpart IIII] See b)(2)e. and c)(2) below.
h.	40 CFR 60.1 – 19 (40 CFR 60.4218)	Table 8 of Subpart IIII of 40 CFR Part 60 – Applicability of General Provisions to Subpart IIII, specifies the provisions of Subpart A that apply to owners and operators of affected facilities subject to this subpart.
i.	40 CFR 63, Subpart ZZZZ (40 CFR 63.6580 – 6675) [In accordance with 40 CFR 63.6585, 63.6590(a)(2)(ii) and 63.6590(c)(6), this emissions unit is an emergency stationary reciprocating internal combustion engine (RICE) with a site rating of less than 500 brake HP located at a major source of hazardous air pollutant (HAP) emissions for which construction commenced after June 12, 2006.]	New emergency stationary RICE with site rating of less than or equal to 500 HP located at a major source of HAP emissions must meet the requirements of this part by meeting the requirements of 40 CFR Part 60, Subpart IIII. No further requirements apply for such engines under this part. [40 CFR 63.6590(c)(6)]
j.	40 CFR 63.1 – 16 (40 CFR 63.6665)	Table 8 of Subpart ZZZZ of 40 CFR Part 63 – Applicability of General Provisions to Subpart ZZZZ, specifies the provisions of Subpart A that apply to owners and operators of affected facilities subject to this subpart.

(2) Additional Terms and Conditions

- a. As part of the Best Available Control Technology (BACT) determination for NMHC + NO_x, CO and PE/PM₁₀/PM_{2.5}, this emissions unit shall be certified to the meet the emissions standards in Table 4 of 40 CFR Part 60, Subpart IIII, shall employ good combustion practices per the manufacturer's operating manual, and shall not operate more than 100 hours per year of non-emergency use. Compliance with these requirements shall be demonstrated by compliance with the short-term NMHC + NO_x, CO and PE/PM₁₀/PM_{2.5} emission limitations in b)(1)a.

- b. As part of the BACT determination for CO₂e, the permittee must implement good operating practices (proper maintenance and operation) and shall not operate more than 100 hours per year of non-emergency use. Compliance with these requirements shall be demonstrated by compliance with the CO₂e emissions limitation in b)(1)a.
 - c. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
 - d. This rule applies once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
 - e. The permittee must comply with the applicable emission and operating limitations of 40 CFR Part 60, Subpart IIII upon startup.
- c) Operational Restrictions
- (1) The permittee shall burn only low-sulfur diesel fuel with a sulfur content of less than 15 ppm (0.0015 percent by weight) in this emissions unit.
 - (2) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200 – 4219).
- d) Monitoring and/or Recordkeeping Requirements
- (1) The permittee shall maintain records of the following information each month:
 - a. the hours of non-emergency operation for this emissions unit; and
 - b. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the non-emergency operating hours for this emissions unit.
 - (2) For each day during which the permittee burns a fuel other than low-sulfur diesel fuel with a sulfur content of less than 15 ppm (0.0015 percent by weight), the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.
- e) Reporting Requirements
- (1) The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. Any exceedences of the 100 hours per year limitation per emission unit on non-emergency operating hours; and
 - b. Any exceedences of the rolling, 12-month emissions limitations for NMHC + NO_x, CO, PE/PM₁₀/PM_{2.5} and CO₂e.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (2) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than low-sulfur diesel fuel with a sulfur content of less than 15 ppm (0.0015 percent by weight) was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
- (3) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200 – 4219).

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitations:

NMHC + NO_x emissions shall not exceed 4.0 g/kW-hour (3.0 g/HP-hour), 2.64 pounds per hour and 0.14 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitations shall be based on the manufacturer's certification to the standards applicable to this emissions unit and by maintaining the engine according to the manufacturer's specifications. See f)(2) below.

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

NMHC + NO_x (tons per rolling, 12-month period) =

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X NMHC + NO_x emissions limitation, in pounds per hour X 1 ton/2,000 pounds

b. Emissions Limitations:

CO emissions shall not exceed 3.5 g/kW-hour (2.6 g/HP-hour), 2.31 pounds per hour and 0.12 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitations shall be based on the manufacturer's certification to the standards applicable to this emissions unit and by maintaining the engine according to the manufacturer's specifications. See f)(2) below.

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

CO (tons per rolling, 12-month period) =

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X CO emissions limitation, in pounds per hour X 1 ton/2,000 pounds

c. Emissions Limitations:

PE and emissions of PM₁₀ and PM_{2.5} shall not exceed 0.20 g/kW-hour (0.15 g/HP-hour), 0.13 pound per hour and 0.0066 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitations shall be based on the manufacturer's certification to the standards applicable to this emissions unit and by maintaining the engine according to the manufacturer's specifications. See f)(2) below.

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

PE/PM₁₀/PM_{2.5} (tons per rolling, 12-month period) =

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X PE/PM₁₀/PM_{2.5} emissions limitation, in pounds per hour X 1 ton/2,000 pounds

d. Emissions Limitation:

CO₂e emissions shall not exceed 23.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

CO₂e (tons per rolling, 12-month period) =

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X CO₂e emissions factor of 458 pounds per hour, calculated from the emissions factors from 40 CFR Part 98, Tables C-1 and C-2 and global warming potentials in 40 CFR Part 98, Table A-1 X 1 ton/2,000 pounds

e. Emissions Limitation:

Visible PE from any stack serving this emissions unit shall not exceed 20 percent opacity as a six-minute average, except as provided by rule.

Applicable Compliance Method:

If required, visible PE shall be determined according to USEPA Method 9.

- (2) Pursuant to 40 CFR 60.4211(g)(2), if the permittee does not install, configure, operate and maintain this emissions unit according to the manufacturer's emission-related written instructions, or if the permittee changes emission-related settings in a way that is

not permitted by the manufacturer, compliance must be demonstrated by conducting the initial performance test in accordance with the following requirements:

- a. An initial performance test shall be performed to demonstrate compliance with the mass emissions limitations in b)(1)a. and g. for NMHC + NO_x, CO and PE/PM₁₀/PM_{2.5}, within one year of startup, or within one year after the emissions unit is no longer installed, configured, operated and maintained in accordance with the manufacturer's emission-related written instructions, or within one year after the permittee changes emission-related settings in a way not permitted by the manufacturer.
- b. The test method(s) in 40 CFR 60.4212 shall be employed to demonstrate compliance with the allowable mass emission rates. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
- c. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).
- d. Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
- e. A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

g) Miscellaneous Requirements

- (1) None.

18. P007, Emergency Diesel-fired Generator Engine (5GE-6401A)

Operations, Property and/or Equipment Description:

2,500 kW (3,353 HP) emergency diesel-fired generator engine

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:

- (1) b)(1)c. and b)(2)d.

- b) Applicable Emissions Limitations and/or Control Requirements

- (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 3745-31-20 and 3745-31-34	<p>Non-methane hydrocarbon plus nitrogen oxides (NMHC + NO_x) emissions shall not exceed 6.4 g/kW-hour (4.8 g/HP-hour), 37.41 pounds per hour and 1.87 tons per rolling, 12-month period.</p> <p>Carbon monoxide (CO) emissions shall not exceed 3.5 g/kW-hour (2.6 g/HP-hour), 19.25 pounds per hour and 0.96 ton per rolling, 12-month period.</p> <p>Particulate emissions (PE), emissions of particulate matter less than 10 microns (PM₁₀) and emissions of particulate matter less than 2.5 microns (PM_{2.5}) shall not exceed 0.20 g/kW-hour (0.15 g/HP-hour), 1.1 pounds per hour and 0.055 ton per rolling, 12-month period.</p> <p>Carbon dioxide equivalent (CO_{2e}) emissions shall not exceed 200.0 tons per rolling, 12-month period.</p> <p>See b)(2)a.-b. below.</p>
b.	OAC rule 3745-31-05(A)(3), as effective 6/30/08	The emissions limitations for NO _x , CO, VOC (NMHC) and PE/PM ₁₀ /PM _{2.5} required by this rule are equivalent to the emissions limitations for NO _x , CO, VOC (NMHC) and PE/PM ₁₀ /PM _{2.5} established

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>pursuant to OAC rules 3745-31-10 through 3745-31-20.</p> <p>Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO_{2e} emissions from this air contaminant source pursuant to OAC rule 3745-31-34(E)(8).</p> <p>See b)(2)c. and c)(1) below.</p>
c.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 6/30/08	<p>BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the NO_x, VOC (NMOC), CO and PE/PM₁₀/PM_{2.5} emissions from this air contaminant source since the calculated annual emission rates are less than 10 tons/year taking into account the federally enforceable limits in OAC rules 3745-31-10 through 20 and 40 CFR Part 60, Subpart IIII.</p> <p>BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the SO₂ emissions from this air contaminant source since the potential to emit of SO₂ is less than 10 tons/year.</p> <p>See b)(2)d. below.</p>
d.	OAC rule 3745-17-07(A)	The emission limitation required by this rule is less stringent than the emissions limitation for PE established pursuant to 40 CFR Part 60, Subpart IIII.
e.	OAC rule 3745-17-11(B)	The emission limitation required by this rule is less stringent than the emissions limitation for PE established pursuant to OAC rules 3745-31-10 through 20.
f.	OAC rule 3745-18-06	This emissions unit is exempt from the requirements of OAC rule 3745-18-06(G) pursuant to OAC rule 3745-18-06(B).
g.	40 CFR 60, Subpart IIII (40 CFR 60.4200 – 4219) [In accordance with 40 CFR 60.4200(a)(2)(i) and 60.4205(b), this emissions unit is a 2,500 kW (3,353 HP) emergency stationary	The emissions limitations required by this rule for NMHC + NO _x , CO and PE/PM ₁₀ /PM _{2.5} are equivalent to the emissions limitations required by OAC rules 3745-31-10 through 20 for NMHC, NO _x , CO and PE/PM ₁₀ /PM _{2.5} .

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	compression ignition (CI) internal combustion engine (ICE) manufactured after April 1, 2006 with a displacement of less than 30 liters per cylinder subject to the emissions limitations/control measures specified in this section.]	<p>Exhaust opacity from CI RICE must not exceed:</p> <p>20 percent during the acceleration mode; 15 percent during the lugging mode; and 50 percent during the peaks in either the acceleration or lugging modes.</p> <p>[40 CFR 60.4205(b), 40 CFR 60.4202(a)(2), 40 CFR 89.112 and 40 CFR 89.113]</p> <p>See b)(2)e. and c)(2) below.</p>
h.	40 CFR 60.1 – 19 (40 CFR 60.4218)	Table 8 of Subpart III of 40 CFR Part 60 – Applicability of General Provisions to Subpart III, specifies the provisions of Subpart A that apply to owners and operators of affected facilities subject to this subpart.
i.	40 CFR 63, Subpart ZZZZ (40 CFR 63.6580 – 6675) [In accordance with 40 CFR 63.6585, 63.6590(a)(2)(i) and 63.6590(b)(1)(i), this emissions unit is an emergency stationary reciprocating internal combustion engine (RICE) with a site rating of more than 500 brake HP located at a major source of hazardous air pollutant (HAP) emissions for which construction commenced after December 19, 2002.]	See e)(4) below.
j.	40 CFR 63.1 – 16 (40 CFR 63.6665)	Table 8 of Subpart ZZZZ of 40 CFR Part 63 – Applicability of General Provisions to Subpart ZZZZ, specifies the provisions of Subpart A that apply to owners and operators of affected facilities subject to this subpart.

(2) Additional Terms and Conditions

- a. As part of the Best Available Control Technology (BACT) determination for NMHC + NO_x, CO and PE/PM₁₀/PM_{2.5}, this emissions unit shall be certified to the meet the emissions standards in Table 4 of 40 CFR Part 60, Subpart III, shall employ good combustion practices per the manufacturer's operating manual and

shall not operate more than 100 hours per year of non-emergency use. Compliance with these requirements shall be demonstrated by compliance with the short-term NMHC + NO_x, CO and PE/PM₁₀/PM_{2.5} emission limitations in b)(1)a.

- b. As part of the BACT determination for CO₂e, the permittee must implement good operating practices (proper maintenance and operation) and shall not operate more than 100 hours per year of non-emergency use. Compliance with this requirement shall be demonstrated by compliance with the CO₂e emissions limitation in b)(1)a.
 - c. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
 - d. This rule applies once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
 - e. The permittee must comply with the applicable emission and operating limitations of 40 CFR Part 60, Subpart IIII upon startup.
- c) Operational Restrictions
- (1) The permittee shall burn only low-sulfur diesel fuel with a sulfur content of less than 15 ppm (0.0015 percent by weight) in this emissions unit.
 - (2) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200 – 4219).
- d) Monitoring and/or Recordkeeping Requirements
- (1) The permittee shall maintain records of the following information each month:
 - a. the hours of non-emergency operation for this emissions unit; and
 - b. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the non-emergency operating hours for this emissions unit.
 - (2) For each day during which the permittee burns a fuel other than low-sulfur diesel fuel with a sulfur content of less than 15 ppm (0.0015 percent by weight), the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.
 - (3) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200 – 4219).
- e) Reporting Requirements
- (1) The permittee shall submit quarterly deviation (excursion) reports that identify the following:

- a. Any exceedences of the 100 hours per year limitation per emission unit on non-emergency operating hours; and
- b. Any exceedences of the rolling, 12-month emissions limitations for NMHC, NO_x, CO, PE/PM₁₀/PM_{2.5} and CO_{2e}.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (2) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than low-sulfur diesel fuel with a sulfur content of less than 15 ppm (0.0015 percent by weight) was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
- (3) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200 – 4219).
- (4) See 40 CFR Part 60, Subpart ZZZZ (40 CFR 63.6580 – 6675).

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:
 - a. Emissions Limitations:

NMHC + NO_x emissions shall not exceed 6.4 g/kW-hour (4.8 g/HP-hour), 37.41 pounds per hour and 1.87 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitations shall be based on the manufacturer's certification to the standards applicable to this emissions unit and by maintaining the engine according to the manufacturer's specifications. See f)(2) below.

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

NMHC + NO_x (tons per rolling, 12-month period) =

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X NMHC + NO_x emissions limitation, in pounds per hour X 1 ton/2,000 pounds

- b. Emissions Limitations:

CO emissions shall not exceed 3.5 g/kW-hour (2.6 g/HP-hour), 19.25 pounds per hour and 0.96 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitations shall be based on the manufacturer's certification to the standards applicable to this emissions unit and by maintaining the engine according to the manufacturer's specifications. See f)(2) below.

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

$$\text{CO (tons per rolling, 12-month period)} =$$

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X CO emissions limitation, in pounds per hour X 1 ton/2,000 pounds

c. Emissions Limitations:

PE and emissions of PM₁₀ and PM_{2.5} shall not exceed 0.2 g/kW-hour (0.15 g/HP-hour), 1.1 pounds per hour and 0.055 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitations shall be based on the manufacturer's certification to the standards applicable to this emissions unit and by maintaining the engine according to the manufacturer's specifications. See f)(2) below.

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

$$\text{PE/PM}_{10}/\text{PM}_{2.5} \text{ (tons per rolling, 12-month period)} =$$

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X PE/PM₁₀/PM_{2.5} emissions limitation, in pounds per hour X 1 ton/2,000 pounds

d. Emissions Limitation:

CO_{2e} emissions shall not exceed 200.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

$$\text{CO}_{2e} \text{ (tons per rolling, 12-month period)} =$$

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X CO_{2e} emissions factor of 4,000 pounds per hour, calculated from the emissions factors from 40 CFR Part 98, Tables C-1 and C-2 and global warming potentials in 40 CFR Part 98, Table A-1 X 1 ton/2,000 pounds

e. Emissions Limitation:

Exhaust opacity from CI RICE must not exceed:

20 percent during the acceleration mode;
15 percent during the lugging mode; and
50 percent during the peaks in either the acceleration or lugging modes.

Applicable Compliance Method:

If required, visible PE shall be determined according to USEPA Method 9. See f)(2) below.

(2) Pursuant to 40 CFR 60.4211(g)(3) and 89.113(b), if the permittee does not install, configure, operate and maintain this emissions unit according to the manufacturer's emission-related written instructions, or if the permittee changes emission-related settings in a way that is not permitted by the manufacturer, compliance must be demonstrated by conducting performance tests in accordance with the following requirements:

- a. An initial performance test shall be performed to demonstrate compliance with the mass emissions limitations in b)(1)a. and g. for NMHC, NO_x, CO, PE/PM₁₀/PM_{2.5} and exhaust opacity within one year of startup, or within one year after the emissions unit is no longer installed, configured, operated and maintained in accordance with the manufacturer's emission-related written instructions, or within one year after the permittee changes emission-related settings in a way not permitted by the manufacturer. Thereafter, subsequent performance testing must be conducted every 8,760 hours of engine operation or three years, whichever comes first.
- b. The test method(s) in 40 CFR 60.4212 shall be employed to demonstrate compliance with the allowable mass emission rates. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
- c. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).
- d. Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

- e. A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.
- g) Miscellaneous Requirements
 - (1) None.

19. Emissions Unit Group - 1,000 kW Emergency Generators: P008 - P010

EU ID	Operations, Property and/or Equipment Description
P008	ECU Generator 1 (5GE-6401B); 1,000 kW (1,341 HP) emergency diesel-fired generator engine
P009	PE 1&2 Generator (5GE-6401C); 1,000 kW (1,341 HP) emergency diesel-fired generator engine
P010	PE 3&4 Generator (5GE-6401D); 1,000 kW (1,341 HP) emergency diesel-fired generator engine

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:

- (1) b)(1)c. and b)(2)d.

b) Applicable Emissions Limitations and/or Control Requirements

- (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rules 3745-31-10 through 20 and 3745-31-34	<p>Non-methane hydrocarbon plus nitrogen oxides (NMHC + NO_x) emissions shall not exceed 6.4 g/kW-hour (4.8 g/HP-hour), 14.96 pounds per hour and 0.75 ton per rolling, 12-month period.</p> <p>Carbon monoxide (CO) emissions shall not exceed 3.5 g/kW-hour (2.6 g/HP-hour), 7.70 pounds per hour and 0.39 ton per rolling, 12-month period.</p> <p>Particulate emissions (PE), emissions of particulate matter less than 10 microns (PM₁₀) and emissions of particulate matter less than 2.5 microns (PM_{2.5}) shall not exceed 0.2 g/kW-hour (0.15 g/HP-hour), 0.44 pound per hour and 0.022 ton per rolling, 12-month period.</p> <p>Carbon dioxide equivalent (CO_{2e}) emissions shall not exceed 80.0 tons per rolling, 12-month period.</p> <p>See b)(2)a.-b. below.</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
b.	OAC rule 3745-31-05(A)(3), as effective 6/30/08	<p>The emissions limitations for NO_x, CO, VOC (NMHC) and PE/PM₁₀/PM_{2.5} required by this rule are equivalent to the emissions limitations for NO_x, CO, VOC (NMHC) and PE/PM₁₀/PM_{2.5} established pursuant to OAC rules 3745-31-10 through 3745-31-20.</p> <p>Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the CO_{2e} emissions from this air contaminant source pursuant to OAC rule 3745-31-34(E)(8).</p> <p>See b)(2)c. and c)(1) below.</p>
c.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 6/30/08	<p>BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the NO_x, VOC (NMHC), CO and PE/PM₁₀/PM_{2.5} emissions from this air contaminant source since the calculated annual emission rates are less than 10 tons/year taking into account the federally enforceable limits in OAC rules 3745-31-10 through 20 and 40 CFR Part 60, Subpart IIII.</p> <p>BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to the SO₂ emissions from this air contaminant source since the potential to emit of SO₂ is less than 10 tons/year.</p> <p>See b)(2)d. below.</p>
d.	OAC rule 3745-17-07(A)	The emission limitation required by this rule is less stringent than the emissions limitation for PE established pursuant to 40 CFR Part 60, Subpart IIII.
e.	OAC rule 3745-17-11(B)	The emission limitation required by this rule is less stringent than the emissions limitation for PE established pursuant to OAC rules 3745-31-10 through 20.
f.	OAC rule 3745-18-06	This emissions unit is exempt from the requirements of OAC rule 3745-18-06(G) pursuant to OAC rule 3745-18-06(B).
g.	40 CFR 60, Subpart IIII (40 CFR 60.4200 – 4219)	The emissions limitations required by this rule for NMHC, NO _x , CO and

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	[In accordance with 40 CFR 60.4200(a)(2)(i) and 60.4205(b), this emissions unit is a 1,000 kW (1,341 HP) emergency stationary compression ignition (CI) internal combustion engine (ICE) manufactured after April 1, 2006 with a displacement of less than 30 liters per cylinder subject to the emissions limitations/control measures specified in this section.]	<p>PE/PM₁₀/PM_{2.5} are equivalent to the emissions limitations required by OAC rules 3745-31-10 through 20 for NMHC + NO_x, CO and PE/PM₁₀/PM_{2.5}.</p> <p>Exhaust opacity from CI RICE must not exceed:</p> <p>20 percent during the acceleration mode; 15 percent during the lugging mode; and 50 percent during the peaks in either the acceleration or lugging modes.</p> <p>[40 CFR 60.4205(b), 40 CFR 60.4202(a)(2), 40 CFR 89.112 and 40 CFR 89.113]</p> <p>See b)(2)e. and c)(2) below.</p>
h.	40 CFR 60.1 – 19 (40 CFR 60.4218)	Table 8 of Subpart IIII of 40 CFR Part 60 – Applicability of General Provisions to Subpart IIII, specifies the provisions of Subpart A that apply to owners and operators of affected facilities subject to this subpart.
i.	40 CFR 63, Subpart ZZZZ (40 CFR 63.6580 – 6675) [In accordance with 40 CFR 63.6585, 63.6590(a)(2)(i) and 63.6590(b)(1)(i), this emissions unit is an emergency stationary reciprocating internal combustion engine (RICE) with a site rating of more than 500 brake HP located at a major source of hazardous air pollutant (HAP) emissions for which construction commenced after December 19, 2002.]	See e)(5) below.
j.	40 CFR 63.1 – 16 (40 CFR 63.6665)	Table 8 of Subpart ZZZZ of 40 CFR Part 63 – Applicability of General Provisions to Subpart ZZZZ, specifies the provisions of Subpart A that apply to owners and operators of affected facilities subject to this subpart.

(2) Additional Terms and Conditions

- a. As part of the Best Available Control Technology (BACT) determination for NMHC + NO_x, CO and PE/PM₁₀/PM_{2.5}, this emissions unit shall be certified to the meet the emissions standards in Table 4 of 40 CFR Part 60, Subpart IIII, shall employ good combustion practices per the manufacturer's operating manual, and shall not operate more than 100 hours per year of non-emergency use. Compliance with these requirements shall be demonstrated by compliance with the short-term NMHC + NO_x, CO and PE/PM₁₀/PM_{2.5} emission limitations in b)(1)a.
- b. As part of the BACT determination for CO₂e, the permittee must implement good operating practices (proper maintenance and operation) and shall not operate more than 100 hours per year of non-emergency use. Compliance with this requirement shall be demonstrated by compliance with the CO₂e emissions limitation in b)(1)a.
- c. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
- d. This rule applies once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
- e. The permittee must comply with the applicable emission and operating limitations of 40 CFR Part 60, Subpart IIII upon startup.

c) Operational Restrictions

- (1) The permittee shall burn only low-sulfur diesel fuel with a sulfur content of less than 15 ppm (0.0015 percent by weight) in this emissions unit.
- (2) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200 – 4219).

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall maintain records of the following information each month:
 - a. the hours of non-emergency operation for this emissions unit; and
 - b. beginning after the first 12 calendar months of operation or the first 12 calendar months following the issuance of this permit, the rolling, 12-month summation of the non-emergency operating hours for this emissions unit.
- (2) For each day during which the permittee burns a fuel other than low-sulfur diesel fuel with a sulfur content of less than 15 ppm (0.0015 percent by weight), the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.
- (3) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200 – 4219).

e) Reporting Requirements

- (1) The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. Any exceedences of the 100 hours per year limitation per emission unit on non-emergency operating hours; and
 - b. Any exceedences of the rolling, 12-month emissions limitations for NMHC, NO_x, CO, PE/PM₁₀/PM_{2.5} and CO₂e.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (2) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than low-sulfur diesel fuel with a sulfur content of less than 15 ppm (0.0015 percent by weight) was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.
- (3) See 40 CFR Part 60, Subpart IIII (40 CFR 60.4200 – 4219).
- (4) See 40 CFR Part 63, Subpart ZZZZ (40 CFR 63.6580 – 6675).

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitations:

NMHC + NO_x emissions shall not exceed 6.4 g/kW-hour (4.8 g/HP-hour), 14.96 pounds per hour and 0.75 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitations shall be based on the manufacturer's certification to the standards applicable to this emissions unit and by maintaining the engine according to the manufacturer's specifications. See f)(2) below.

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

$$\text{NMHC} + \text{NOx (tons per rolling, 12-month period)} =$$

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X NMHC + NO_x emissions limitation, in pounds per hour X 1 ton/2,000 pounds

b. Emissions Limitations:

CO emissions shall not exceed 3.5 g/kW-hour (2.6 g/HP-hour), 7.70 pounds per hour and 0.39 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitations shall be based on the manufacturer's certification to the standards applicable to this emissions unit and by maintaining the engine according to the manufacturer's specifications. See f)(2) below.

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

CO (tons per rolling, 12-month period) =

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X CO emissions limitation, in pounds per hour X 1 ton/2,000 pounds

c. Emissions Limitations:

PE and emissions of PM₁₀ and PM_{2.5} shall not exceed 0.2 g/kW-hour (0.15 g/HP-hour), 0.44 pound per hour and 0.022 ton per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the short-term emissions limitations shall be based on the manufacturer's certification to the standards applicable to this emissions unit and by maintaining the engine according to the manufacturer's specifications. See f)(2) below.

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

PE/PM₁₀/PM_{2.5} (tons per rolling, 12-month period) =

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X PE/PM₁₀/PM_{2.5} emissions limitation, in pounds per hour X 1 ton/2,000 pounds

d. Emissions Limitation:

CO_{2e} emissions shall not exceed 80.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance with the rolling, 12-month emissions limitation shall be demonstrated based on the following calculation:

CO_{2e} (tons per rolling, 12-month period) =

hours of operation per rolling, 12-month period, as recorded in d)(1)(b) X CO₂e emissions factor of 1,600 pounds per hour, calculated from the emissions factors from 40 CFR Part 98, Tables C-1 and C-2 and global warming potentials in 40 CFR Part 98, Table A-1 X 1 ton/2,000 pounds

e. Emissions Limitation:

Exhaust opacity from CI RICE must not exceed:

20 percent during the acceleration mode;

15 percent during the lugging mode; and

50 percent during the peaks in either the acceleration or lugging modes.

Applicable Compliance Method:

If required, visible PE shall be determined according to USEPA Method 9. See f)(2) below.

(2) Pursuant to 40 CFR 60.4211(g)(3) and 89.113(b), if the permittee does not install, configure, operate and maintain this emissions unit according to the manufacturer's emission-related written instructions, or if the permittee changes emission-related settings in a way that is not permitted by the manufacturer, compliance must be demonstrated by conducting performance tests in accordance with the following requirements:

- a. An initial performance test shall be performed to demonstrate compliance with the mass emissions limitations in b)(1)a. and g. for NMHC, NO_x, CO, PE/PM₁₀/PM_{2.5} and exhaust opacity within one year of startup, or within one year after the emissions unit is no longer installed, configured, operated and maintained in accordance with the manufacturer's emission-related written instructions, or within one year after the permittee changes emission-related settings in a way not permitted by the manufacturer. Thereafter, subsequent performance testing must be conducted every 8,760 hours of engine operation or three years, whichever comes first.
- b. The test method(s) in 40 CFR 60.4212 shall be employed to demonstrate compliance with the allowable mass emission rates. Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
- c. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).
- d. Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and

information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

- e. A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

g) Miscellaneous Requirements

- (1) None.

20. P011, Cooling Tower (5E-5201)

Operations, Property and/or Equipment Description:

Multi-cell, induced-draft, counter-flow evaporative cooling tower with side stream filtration system and high efficiency mist/drift eliminator

- a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

- (1) b)(1)d., b)(2)e. and b)(2)f.

- b) Applicable Emissions Limitations and/or Control Requirements

- (1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-10 through 3745-31-20	Best Available Control Technology (BACT) for volatile organic compounds (VOC), particulate emissions (PE), particulate matter 10 microns or less in size (PM_{10}) and particulate matter 2.5 microns or less in size ($PM_{2.5}$). See b)(2)a.
b.	ORC 3704.03(T)	Best Available Technology (BAT) for VOC See b)(2)b.
c.	OAC rule 3745-31-05(A)(3) June 30, 2008	See b)(2)c. and b)(2)d.
d.	OAC rule 3745-31-05(A)(3)(a)(ii) June 30, 2008	See b)(2)e. and b)(2)f.
e.	OAC rule 3745-17-11	See b)(2)g.
f.	OAC rule 3745-17-07(A)	See b)(2)h.
g.	OAC rule 3745-21-07	See b)(2)i.
h.	40 CFR Part 63, Subpart F (40CFR 63.100 – 63.107) [In accordance with 40 CFR 63.101 this emissions unit is a heat exchange system subject to requirements in §63.104]	Heat exchange system requirements [40 CFR 63.104] See c)(2), d)(6), and e)(3).
i.	40 CFR Part 63, Subpart XX (40 CFR 63.1080 – 63.1090 and	Leak monitoring and repair for cooling water [40 CFR 63.1085]

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	63.1097) [In accordance with 40 CFR 63.1083 and 63.1093, this emissions unit involves heat exchange systems subject to the requirements specified in this section.]	See c)(1), d)(5), and e)(2).
j.	40 CFR Part 63, Subpart YY (40 CFR 63.1100 – 63.1114) In accordance with 40 CFR 63.1100, this emissions unit involves heat exchange systems subject to the requirements specified in this section.]	Comply with the heat exchange system requirements of 40 CFR Part 63, Subpart XX [40 CFR 63.1103]
k.	40 CFR Part 63, Subpart A (40 CFR 63.1-16)	All of the General Provisions of 40 CFR Part 63, Subpart A apply except as indicated: The provisions of §63.1 to §63.16 do not apply to 40 CFR Part 63, Subpart XX except as specified in 40 CFR Part 63, Subpart YY [§63.1083]

(2) Additional Terms and Conditions

- a. The permittee shall employ BACT for this emissions unit. BACT has been determined to be the following:
 - i. for emissions of particulate matter (PE, PM₁₀, and PM_{2.5}):
 - (a) use of high efficiency drift eliminator designed to achieve a 0.0005% drift rate;
 - (b) maintenance of a total dissolved solids (TDS) content not to exceed 2,000 ppm in the circulating cooling water based on a rolling 12-month average;
 - (c) 5.07 tons PE per rolling 12-month period;
 - (d) 3.22 tons PM₁₀ per rolling 12-month period; and
 - (e) 0.01 ton PM_{2.5} per rolling 12-month period.
 - ii. for VOC emissions:

- (a) VOC content in cooling water shall not exceed a concentration of 0.7 lb/MMgal;
 - (b) Compliance with heat exchange leak monitoring and repair requirements for affected ethylene manufacturing process units contained in 40 CFR Part 63 Subpart XX has been determined to be representative of BACT; and
 - (c) 42.55 tons per rolling 12-month period.
- b. BAT requirements for VOC emissions under ORC 3704.03(T) have been determined to be compliance with the emission limitation and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
 - c. BAT requirements for PM₁₀ and PM_{2.5} under OAC rule 3745-31-05(A)(3) have been determined to be compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-10 through 3745-31-20.
 - d. This BAT emission limit applies until U.S. EPA approves Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) into the Ohio State Implementation Plan (SIP).
 - e. The BAT requirements under OAC rule 3745-31-05(A)(3) do not apply to emissions of PM₁₀/PM_{2.5}, from this air contaminant source since the potential to emit is less than 10 tons/year (taking into account the federally enforceable BACT requirements when applicable). It should be noted that emissions of PE are not subject to BAT under OAC rule 3745-31-05(A)(3).
 - f. These requirements apply once U.S. EPA approves OAC paragraph 3745-31-05(A)(3)(a)(ii) (the less than 10 tons per year BAT exemption) as part of the Ohio SIP.
 - g. This emissions unit is not subject to the "restrictions on particulate emissions from industrial processes" contained in OAC rule 3745-17-11. Particulate matter emitted from the cooling tower is not measurable by applicable test methods in 40 CFR Part 60, Appendix A and therefore the emissions of particulate matter do not meet the definition of "Particulate emissions" in OAC rule 3745-17-01.
 - h. This emissions unit is exempt from the visible emission limitation specified in OAC rule 3745-17-07(A), pursuant to OAC rule 3745-17-07(A)(3)(h), because the emissions unit is not subject to the requirements of OAC rule 3745-17-11.
 - i. The requirements of OAC rule 3745-21-07 are not applicable to this emissions unit in accordance with OAC rule 3745-21-07(M)(3)(c).
- c) Operational Restrictions
 - (1) See 40 CFR Part 63, Subpart XX (40 CFR 63. 63.1080 – 63.1090 and 63.1097).
 - (2) See 40 CFR Part 63, Subpart F (40 CFR 63.100 – 63.107).

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall measure the TDS content (in ppm) of the circulating cooling water on a monthly basis using EPA Method 160.1. Other methods may be used upon approval from Ohio EPA.
- (2) The permittee shall determine the VOC content (in lbs/MMgal) of the circulating cooling water using applicable methodologies contained in 40 CFR Part 136. The frequency for VOC content determination shall be consistent with the monitoring frequency requirements outlined in 40 CFR Part 63 Subpart XX.
- (3) The permittee shall maintain monthly records of the following information for the circulating cooling water:
 - a. the monthly TDS content, in ppm;
 - b. the average TDS content, in ppm, based on a rolling, 12-month average.
- (4) The permittee shall maintain monthly/quarterly records as applicable of the VOC content of the circulating cooling water, in lbs/MMgal.
- (5) See 40 CFR Part 63, Subpart XX (40 CFR 63. 63.1080 – 63.1090 and 63.1097).
- (6) See 40 CFR Part 63, Subpart F (40 CFR 63.100 – 63.107).

e) Reporting Requirements

- (1) The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. any record which shows that the average TDS content of the circulating cooling water exceeds 2,000 ppm (based on a rolling, 12-month average); and
 - b. any record which shows that the VOC content of the circulating cooling water exceeds 0.7 lb/MMgal.

The quarterly deviation reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

- (2) See 40 CFR Part 63, Subpart XX (40 CFR 63. 63.1080 – 63.1090 and 63.1097).
- (3) See 40 CFR Part 63, Subpart F (40 CFR 63.100 – 63.107).

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitations:

Annual emissions shall not exceed:

PE- 5.07 tons per rolling 12-month period;

PM₁₀ – 3.22 tons per rolling 12-month period; and

PM_{2.5} - 0.01 ton per rolling 12-month period.

Applicable Compliance Method:

Compliance with the annual emission limitation is demonstrated based upon the following calculation:

$$E_i = (0.000005) \left(\frac{\%DM_i}{100} \right) \left(\frac{2,000}{1,000,000} \right) \left(\frac{8.34 \text{ lbs}}{\text{gal}} \right) \left(\frac{13.878 \text{ MMgal}}{\text{hour}} \right) \left(\frac{8,760 \text{ hrs}}{\text{year *}} \right) \left(\frac{\text{Ton}}{2,000 \text{ lbs}} \right)$$

Where:

E_i = total tons of particulate matter per rolling 12-month period, i (i = PE, PM₁₀, PM_{2.5})

0.000005 = maximum drift loss of 0.0005%

%DM_i = percent of total drift mass** for particulate size i

%DM_i = 100% for total particulate emissions (PE)

%DM_i = 9.7% for emissions of PM₁₀

%DM_i = 0.11% for emissions of PM_{2.5}

2,000/1,000,000 = maximum TDS content in ppm in circulating cooling water.

8.34 lbs/gal = density of water.

13.878 MMgal/hour = maximum cooling water recirculation rate.

8,760 hrs/yr = maximum annual operating schedule in rolling 12-month period.

*year = rolling 12-month period.

**The percent mass of the total drift for PM₁₀ and PM_{2.5} was determined by "Calculating Realistic PM10 emission from Cooling Towers", Joel Reisman and Gordon Frisbie, Greystone Environmental Consultants, Sacramento, CA (July 2002).

If required, the permittee shall submit a testing proposal that will demonstrate that the maximum drift loss does not exceed 0.0005%.

b. Emission Limitation:

VOC emissions shall not exceed 42.55 tons per rolling 12-month period.

Applicable Compliance Method:

The annual emission limitation was developed in accordance with the following calculation*:

$$E = \left(\frac{0.7 \text{ lb VOC}}{\text{MMgal}} \right) \left(\frac{13.878 \text{ MMgal}}{\text{hour}} \right) \left(\frac{8,760 \text{ hrs}}{\text{year} **} \right) \left(\frac{\text{Ton}}{2,000 \text{ lbs}} \right)$$

Where:

E = total tons of VOC per rolling 12-month period

0.7 lb VOC/MMgal = maximum concentration of VOC in circulating cooling water.

14.40 MMgal/hour = maximum cooling water recirculation rate.

8,760 hrs/yr = maximum annual operating schedule in rolling 12-month period.

*Calculation conservatively assumes a 100% emission rate of all VOC contained in circulating cooling water.

**year = rolling 12-month period.

Therefore, provided compliance is shown with the maximum concentration of VOC in the circulating cooling water, compliance with the annual emission limitation shall also be demonstrated.

g) Miscellaneous Requirements

- (1) None.